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ABSTRACT

This final report presents the evaluation procedures and data pertaining to the California Telemation Project, a statewide effort which began in 1993 to equip K-12 educators and administrators with the skills and knowledge necessary to successfully use telecommunications technology in support of teaching and learning. The report consists of three parts: (1) Project Overview and Evaluation Plan; (2) Evaluation Findings and Analysis; and (3) Implications for Future Planning. The evaluation questions focused on five major areas of inquiry: organizational structures, participants, and partners; implementation and follow-up resource assessment; training and support assessment; impact on teachers, students, and the school; and overall reactions to the telemation program. Major findings include: (1) the recruiting process for telementors yielded highly motivated and competent telecommunications resource staff; (2) there was some inconsistency and confusion regarding the role to be played by regional partners; (3) the degree of participation in the project by administrators was fairly low; and (4) local sites' follow-through on the commitment to provide telementors with the necessary access to equipment and resources was inconsistent. Extensive recommendations are given. Appendices include assessment and evaluation instruments; state telementor curriculum plans; telementor application and recruitment materials; and list of partners and telementors. (AEF)

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TELEMATION PROJECT EVALUATION

FINAL REPORT

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PREPARED BY
FAR WEST LABORATORY

November 13, 1995

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TELEMATION PROJECT EVALUATION

FINAL REPORT

PREPARED BY
FAR WEST LABORATORY

November 13, 1995

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

TELEMATION PROJECT EVALUATION

I. Project Overview and Evaluation Plan.....1
- A. Background.....1
- B. Telemation Project Overview.....1
- C. Evaluation Plan.....3

II. EVALUATION FINDINGS AND ANALYSIS.....11
- A. Organizational Structures, Participants, and Partners.....11
- B. Implementation and Follow-up Resource Assessment.....17
- C. Training Support Assessment.....30
- D. Impact on Teachers, Students, and the School.....40
- E. Overall Reactions to the Telemation Program.....51

III. IMPLICATIONS FOR FUTURE PLANNING.....57

APPENDICES
- A. Assessment and Evaluation Instruments
- B. State Telementor Curriculum Plans
- C. Telementor Application and Recruitment Materials
- D. List of Partners and Telementors

EXECUTIVE SUMMARY

A. GENERAL BACKGROUND

Far West Laboratory for Educational Research and Development was contracted by the California Department of Education (CDE) to conduct a two-pronged study of telecommunications usage in education settings. One component consists of an overview of current research and practice on the policy, planning, implementation, and teacher staff development of telecommunications and technology in K-12 education, and is provided in a separate report.

The second component (and the basis of this report) consists of a comprehensive evaluation of the project known as "Telemation," a statewide effort begun in 1993 to equip educators and administrators with the skills and knowledge necessary to successfully use telecommunications technology in support of teaching and learning.

This executive summary provides an overview of the Telemation evaluation, highlights some of the major findings and implications, and offers a set of recommendations for consideration by project leaders and policy-makers.

B. EVALUATION OVERVIEW

The purpose of the evaluation was two-fold:

1. to document and describe the implementation of the Telemation Project, and
2. to assess the impact of the Telemation Project on the various constituent groups it was designed to serve.

The evaluation questions focused on five major areas of inquiry:

A. *Organizational Structures, Participants, and Partners:* How was the Telemation Project structured to support its goals?

B. *Implementation and Follow-up Resource Assessment:* What did and did not occur in the course of conducting the Telemation Project?

C. *Training and Support Assessment:* How satisfied were State and Local Telementors and administrators with the Project's activities and follow-up support?

D. *Impact on Teachers, Students, and the School:* What have been the effects of the Telemation Project on teachers and other school staff members, on students, and on the larger school community?

E. *Overall Reactions to the Telemation Program:* To what extent do key players and participants view the overall Telemation Project as effective and worth the cost and effort?

The design of the evaluation combined both quantitative and qualitative methods to provide a comprehensive description and assessment of these issues.

C. SUMMARY OF MAJOR FINDINGS IMPLICATIONS AND RECOMMENDATIONS

1. The process for recruiting and selecting the State and Local Telementors was seen as particularly effective in producing groups of highly motivated and competent telecommunications resource staff. Three criteria were emphasized in the selection process: 1) solid teaching background, 2) strong group facilitation or staff development skills, and 3) expertise in telecommunications, though the latter was viewed to be of lesser importance than the first two. The assumption was that if telecommunications technology is to be used effectively as a tool to support teaching and learning, then the skills that are most critical for resource staff are those that pertain to sound instruction, as opposed to solely technical skills. This approach stands in contrast to many other technology-based staff development programs which have gone about the process from the opposite direction. That is, many other programs have tended to emphasize technological expertise over instructional skill when selecting and training participants.

Recommendation(s):

- *When selecting individuals whose role is to promote the effective use of telecommunications to support instruction, maintain the emphasis stressed by the Telemation Project by making sound instructional and staff development skills a prerequisite and prior telecommunications experience optional.*

2. There was some inconsistency and confusion regarding the role to be played by the Regional Partners. Interagency collaboration was seen as key to the success of the project, and indeed many benefits were realized from the partnerships that were created. However, the difficulties and misunderstandings that arose along the way suggest that effective interagency collaboration does not occur automatically when diverse individuals gather together. Much up-front and ongoing work and communication is required in order for a solid basis of mutual understanding and expectations to be built.

Recommendation(s):

- *When forming interagency partnerships, take time early in the process to clarify specific roles and expectations, and put those understandings in writing.*

- *Revisit agreed-upon roles and expectations periodically to ensure their continued relevance and acceptability. This is especially necessary in those instances in which there has been turnover among the original key players who formed the initial agreements.*

3. The degree of participation in the project by administrators was fairly low, yet those who did participate were satisfied with their involvement, and their support was valued by the participating teachers. Since the emphasis of the Telemation Project was on involving teachers, understandably less time and energy was devoted to the process of recruiting and training administrators. However, many participants indicated that the support and involvement of administrators is crucial to their ongoing success in securing and using telecommunications resources in the classroom, and participants were strongly in favor of more awareness-building and training activities aimed at local administrators.

Recommendation(s):

- *Design and conduct telecommunications awareness-building and training activities geared toward school administrators.*

- *When recruiting for or marketing such activities, emphasize administrators' own felt needs in addition to describing the benefits likely to be gained by teachers and/or students.*

4. Local sites' follow-through on the commitment to provide Telementors with the necessary access to telecommunications equipment and resources was inconsistent. Every Telementor was required to provide assurances of their local site's commitment to provide necessary telecommunications resources, and in most cases there were no problems. However, nearly 20% of the Local Telementors responding to the survey indicated that they could not implement their curriculum projects back in the classroom because they did not have the necessary access to equipment and telecommunications resources.

Recommendation(s):

- *When conducting a telecommunications training program for teachers aimed at effecting change in the classroom, either require more stringent assurances up-front regarding participants' access to necessary resources, or*

- *if possible, build in project resources that can be used to subsidize or support the procurement of local telecommunications resources.*

5. Limited funding for telecommunications was seen as a significant barrier both to initiating and maintaining the use of telecommunications technology to support teaching and learning. Less than half of the State and Local Telementors indicated that their school had monies that were specifically earmarked for technology, and increased funding was seen by many as an urgent need with respect to ensuring the continued use of educational telecommunications in the classroom.

Recommendation(s):

- *Assist administrators and teachers in the identification of supplementary funding sources and/or in effective strategies for re-allocating existing resources such as school improvement funds, block grants, and other sources to support the use of telecommunications.*

- *Offer direct or indirect support for procuring additional technology funding (e.g., grant-writing assistance, consultation, referral to outside resources or technical assistance entities).*

6. Technical difficulties associated with the TeleLearning Mobile Unit (TMU) at times threatened the viability of the project. Central to the conduct of the Telemation Project was the use of the TMU, a semi-truck equipped with 24 computer workstations and a satellite connection. Ideally, all Local Training Institutes were to occur in this vehicle, thereby ensuring equal access to necessary telecommunications equipment across participants from all regions of the state. However, there were numerous instances of technical breakdowns and malfunctions with the net result ranging from mild frustration and plan changes to exasperation and thwarted training efforts.

Recommendation(s):

- *In designing future projects which rely heavily, as Telemation did, on a particular piece of equipment, pilot-test the use of that equipment first on a smaller scale, or*

- *Pace implementation such that there is time to trouble-shoot and eliminate problems between program phases.*

- *If the TMU continues to be used in the future, provide for adequate on-site technical support.*

- *If the TMU continues to be used, ensure that all trainings of State Telementors include alternative "back-up" activities and arrangements in the event of technical difficulties.*

- *Provide additional technical training to Telementors or others who would use the TMU as a training facility so that they would be better equipped to trouble-shoot and handle technical difficulties on their own.*

7. Despite the technical and other difficulties that occurred, most State Telementors and responding Local Telementors were satisfied with the training experience and felt that it prepared them well for integrating telecommunications into instruction. Telementors valued the project's overall emphasis on curriculum and instruction, though they desired less time devoted to these issues during actual training. Additionally, participants valued the on-line exploration opportunities, though some of the less technically-versed felt at times overwhelmed.

Recommendation(s):

- *Continue and expand the existing training time devoted to on-line exploration, but provide participants with additional step-by-step handouts to help guide that exploration and reduce confusion.*

- *Continue to emphasize the importance of using telecommunications in support of curriculum and instruction, but devote less lecture time during training to those issues. Instead, discuss instructional issues in context as they arise specifically in connection with designing the curriculum projects.*

- *Consider dividing trainees into high- and not-so-high technology ability groups, to allow those with more experience to move ahead without overwhelming those who need a slower pace.*

8. Requiring all Telementors to design a telecommunications curriculum project and implement it within their own classrooms provided a vehicle for the effective integration of telecommunications to improve teaching and learning. These projects provided a context and focus for participants to put into practice what they were learning, and the Telementors felt they experienced a great deal of success in doing so. Moreover, almost all of them expressed a willingness and interest in expanding these projects and in helping other teachers to adopt or adapt them.

Recommendation(s):

- *Continue requiring participants in this or similar staff development programs to develop specific curriculum projects that help teachers focus and target the use of telecommunication tools and resources to support state and local curriculum objectives.*

- *Provide Telementors with formal or informal opportunities to reflect on their learnings and continue to improve on or expand their curriculum projects.*

- *Develop means to facilitate communication, collaboration, and technical assistance between existing Telementors and other teachers who might wish to adopt or adapt Telementors' curriculum projects.*

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9. As a result of the Telemation Project, most teachers reported positive outcomes for students and staff. Survey results, interviews, and open-ended written comments pointed to a number of very positive impacts and outcomes for a variety of constituents. Conclusions can be drawn only tentatively, however, given the self-report nature of the data itself. To draw more firm conclusions, more information is needed.

Recommendation(s):

- *Conduct follow-up study and analysis of the impact of the Telemation "Curriculum Projects" on the student outcomes intended to result from these projects.*
- *Follow up with non-respondents, i.e., those Telementors, administrators, and partners who did not respond to the surveys, in order to ensure a balanced perspective across all participants.*
- *In designing future evaluations of projects such as Telemation, employ methods that can shed more light on the links between training and teacher behavior, and between changed teacher behavior and student outcomes.*

10. Preliminary results of the State and Local Telementors' project-based teaching approach affected improvement in student outcomes. The Telementors were asked to rate the change in their students' performance on a variety of indicators including report card grades, telecommunications use, interest in school, problem solving skills, class participation, and others. Because most of the Telementors were in the beginning stages of their projects, the findings are tentative. However, observations and anecdotal evidence were suggestive of strong, positive student outcomes.

Recommendation(s):

- *Follow-up with the collection of student-outcome data as Telementors complete their projects to determine the level of student impact.*
- *Future evaluations of Telemation should include more comprehensive student outcome measurements.*
- *Telementors' curriculum projects should be expanded to include student assessment indicators.*

11. E-mail appeared to be useful and effective communications vehicle among the Telementors. Almost all of the Telementors used the e-mail on a regular basis among themselves, as well as with project leadership. Usage fluctuated during the course of the school year, with heaviest usage corresponding to heaviest periods of curriculum project implementation.

Recommendation(s):

> • *Continue to track use of the e-mail system to determine usage, costs, and benefits.*
>
> • *Explore the possibility of Telementor Institute participant follow-up support via e-mail.*

D. KEY FEATURES OF THE APPROACH AND IMPLICATIONS FOR FUTURE PLANNING

Telemation offers a model approach for building the local capacity of teachers to effectively utilize telecommunications and integrate information resources and communications opportunities into teaching and learning. Following is a brief discussion of each of these features followed by a recommendation to consider in developing a system to provide needed staff development and technical assistance for the educational application of telecommunications.

• **Multi-tiered mentoring.** The Telemation Project capitalizes on the benefits of using practicing teachers to provide the training and technical assistance to support classroom integration of telecommunications. The selection of regional or State Telementors who are organized to train Local Telementors who in turn train local teachers is an effective model to consider when designing a large-scale staff development program.

Recommendation:

> *Establish a process for the selection, training, and support of teachers to serve as mentors at the regional, school, and classroom level to train and support the local integration of telecommunications into teaching and learning.*

• **Regional organizational structure.** It is clear that regional agencies such as county offices of education, the California Technology Assistance Project (CTAP), and other regional entities must play an active role in helping to select, train, and develop the curriculum-based training for the Telementors. The regional structures are critical to providing ongoing management and monitoring, as well as technical support to help ensure that teachers are connected to the network and have access to support resources.

Recommendation:

> *Utilize the resources of the existing organizational structures in the state including the Department of Education, the County Offices of Education, and other existing agencies to actively support the coordinated design and implementation of the staff development program .*

• **Business and organizational partnerships.** Telemation was initiated with the concept of leveraging resources from as many partners as possible. Partners consisted of the stakeholders and agencies that offered support for project implementation.

Recommendation:

> *Actively involve a wide variety of business and organizational partners to plan, support, expand and advocate for the Telementor program.*

• **Project-based teaching approach.** The use of the "Curriculum Projects" developed by each of the participating State and Local Telementors was a critical program factor. The decision to apply this model was based on previous research conducted on the California Model Technology Schools, and the projects provided teachers with a reason to use the technology.

Recommendation:

> *Ensure that teachers (and/or teacher teams) develop specific and instructionally meaningful use for the telecommunication tools, resources, and related technologies through their own development of "Curriculum Projects."*

• **Tying Telecommunications Use to curriculum.** Often telecommunications is employed without attention to the specific integration of the technology to support both current and emerging curriculum reforms and initiatives. In these cases research shows that technology use is either not sustained, or fails to produce valuable contribution to teaching and learning.

Recommendation:

> *The planning and implementation of telecommunications tools and resources should be closely tied to state and local curriculum priorities and to students' instructional needs.*

• **Linking lessons learned to future planning.** The evaluation of Telemation concluded that the program and approach was well worth the funding expended for the program. However, there are many lessons learned in the efforts to develop and implement a large scale program to provide needed staff development and support for effective telecommunications use. The suggestions that emerged from this study should be used to inform and guide future efforts to implement and/ or scale up this program or similar programs.

Recommendation:

> *Utilize the results of this study to inform future planning and adaptation of the major elements of Telemation.*

TELEMATION PROJECT EVALUATION

This report presents the evaluation procedures and data pertaining to the California Telemation Project. It consists of three parts: I. Project Overview and Evaluation Plan, II. Evaluation Findings and Analysis, and III. Implications for Future Planning.

I. PROJECT OVERVIEW AND EVALUATION PLAN

A. Background

Far West Laboratory for Educational Research and Development was contracted by the California Department of Education to conduct a two-pronged study of telecommunications usage in education settings. One component consists of a national overview of current applications of telecommunications in K-12 education and teacher training programs, and is contained in a separate report.

The second component (and the basis of this report) consists of a comprehensive evaluation of the project known as "Telemation," a statewide effort begun in 1993 to equip educators and administrators with the skills and knowledge necessary to successfully use telecommunications technology to support teaching and learning.

B. Telemation Project Overview

The California Telemation Project is a collaborative program to provide educators with professional development in the use of telecommunications to enhance teaching and learning. The primary emphasis was on integrating telecommunications-based resources into site level planning, curriculum, learning strategies, and student-centered activities to benefit both teachers and students. The general approach was to utilize a three tiered 'training of trainers' model that builds the capacity of regional "Telementors" to provide local training to school-site based "Local Telementors" who, in turn, train and support local teachers to use telecommunications resources in support of teaching and learning.

State Telementors: Twenty State Telementors (see Appendix D), were selected to provide regional support and training in the use of on-line information as learning resources. The State Telementors:

- were trained in curriculum development, group facilitation skills, and telecommunications usage during the winter and early spring of 1993-94.
- developed telecommunications Curriculum Projects that integrated telecommunication-based resources into California framework-based curricular content, emphasizing the instructional strategies featured in California's reform documents.
- provided a five-day Telemation Institute for approximately 24 "Local Telementor" participants from their region in the summer of 1994.

Local Telementors: Approximately 400 Local Telementors were selected early in 1994 and subsequently trained by the State Telementors. Local Telementors are currently developing their

own telecommunications Curriculum Projects using the State Telementors' projects as models, support resources found on the Internet, and resources from the Telemation Partners. A number of principals also attended Telemation Training Institutes that had an administrative focus. These were sponsored by Association of California School Administrators and coordinated through the Telemation Project.

General objectives for Local Telementors were:

- to increase communication and resource sharing with other educators via a variety of electronic networks
- to increase competency in information literacy -- the ability to access, evaluate, and use information from a variety of resources
- to develop, implement, and evaluate telecommunications curriculum plans that emphasized student objectives including: 1) expansion of global awareness, 2) development of information literacy skills, 3) enhanced critical thinking and problem solving skills, and 4) increased access to and use of educationally relevant, up-to-date information .
- to create meaningful learning opportunities for students

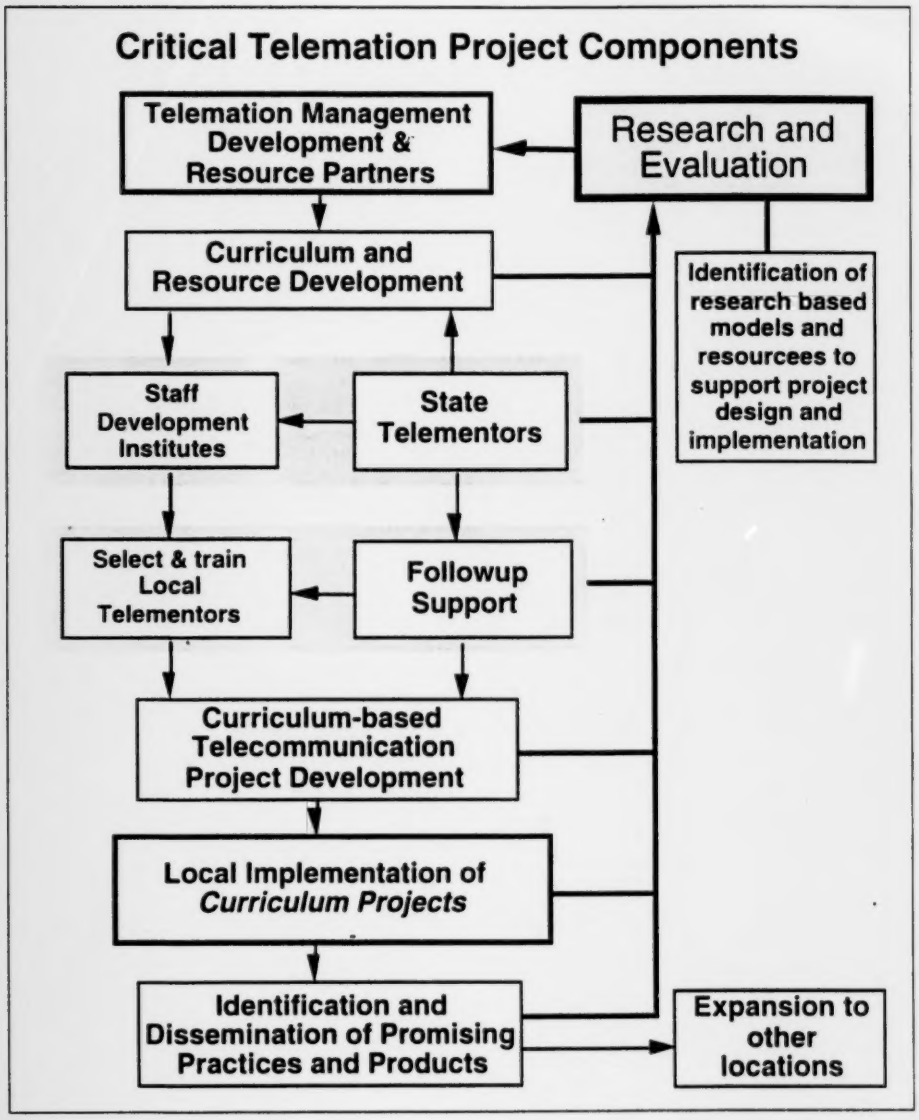
TeleLearning Mobile Unit (TMU): A TeleLearning Mobile Unit (TMU) was designed to serve as a mobile classroom learning center for use by Telementors to conduct training. Twenty four workstations offering choices of either Windows or Macintosh platforms, were networked, and each workstation had an independent telephone connection via satellite so that participants could select and access on-line resources. Other technologies were available in the TMU, including laser disk players, CD-ROM drives, a satellite downlink and a library of print and non-print resources. The TMU ensured a completely equipped training facility regardless of location.

Telemation Partners: The partners served as resources to the Telementors and provided the project with additional resources on an in-kind basis. The partners included 13 county offices of education, a rural unified school district, a public television station, the California Association of School Administrators, and Computer-Using Educators.

Funding: Funding for the Telemation Project was made possible by a grant from the California Department of Education under the provisions of *The California Master Plan for Educational Technology* and SB 1510.

Evaluation: Evaluation provided by the Far West Laboratory served to provide ongoing feedback from observations, interviews, and surveys to help identify needed project modifications. Evaluation activities also focused on determining promising practices and products for potential dissemination.

The following graphic illustrates the major components of the Telemation project and shows the relationship of evaluation to these components.


Critical Telemation Project Components
Telemation Management Development & Resource Partners
Research and Evaluation
Curriculum and Resource Development
Identification of research based models and resourcees to support project design and implementation
Staff Development Institutes
State Telementors
Select & train Local Telementors
Followup Support
Curriculum-based Telecommunication Project Development
Local Implementation of *Curriculum Projects*
Identification and Dissemination of Promising Practices and Products
Expansion to other locations

C. Evaluation Plan

The evaluation provided project-wide, institute specific, and classroom-specific data intended to yield recommendations for program improvement while identifying promising practices for other schools to adopt or adapt. Specific evaluation questions were determined jointly by the Telemation staff, the California Department of Education, and the FWL evaluation team. A variety of assessment procedures ranging from quantitative to qualitative methods were developed to address the questions.

Included in this section are: 1) a list of the evaluation questions, 2) a summary of the data sources that were used, and 3) a table depicting which data sources were used to address specific evaluation questions.

Evaluation Questions: The 18 questions guiding the evaluation of the Telemation Project fell into five broad categories:

A. Organizational Structures, Participants, and Partners

A1. What structures, roles, and processes were created to coordinate the Telemation Project as a whole?

A2. What constituent groups were represented in the design and conduct of the Telemation Project?

A3. Who were the project participants and how were they selected?

B. Implementation and Follow-up Issues

B1. What kind of training and follow-up support was provided to State and Local Telementors and administrators via the Telemation Project?

B2. What kind of resources or supports were provided to State and Local Telementors from their own district sites or regional partners?

B3. Who attended the training sessions and participated in follow-up activities?

B4. To what extent and about what did project participants communicate "horizontally" (i.e., with each other) and "vertically" (i.e., with project leadership)?

B5. How many and what types of technology-based curriculum plans did participants develop?

B6. To what extent are participants implementing their curriculum plans within their own classrooms?

B7. What challenges or barriers emerged over the course of Telemation project implementation?

B8. What facilitative factors emerged as important over the course of implementation?

C. Participant Satisfaction with Training and Support

C1. How satisfied were State and Local Telementors and administrators with the Project's training activities?

C2. How satisfied were State and Local Telementors with the nature and degree of follow-up support provided by the project?

D. Impact on Teachers, Students, and the School

D1. To what extent has the Telemation Project had an impact on participating *teachers/school staff*?

D2. To what extent has the Telemation Project had an impact on *students* (e.g., on student learning, attendance, etc.)?

D3. To what extent has the Telemation Project had an impact on the larger *school community and/or the community at large*?

E. Overall reactions to the Telemation Program

E1. To what extent do key players and participants view the overall Telemation model as effective?

E2. To what extent do key players and participants view the results obtained via the overall Telemation Project as worth the cost and effort involved?

Data Sources Used to Evaluate the Telemation Project: A wide variety of data sources were developed for the project. Evaluation procedures were designed both to help inform changes in the project as it was being implemented, as well as to provide summative information needed for the overall evaluation of the project (See Appendix A for copies of the assessment instruments).

1. **Local Telementor Survey**: In January 1995, approximately six months following the Local Telementors' participation in the Training Institutes conducted within their regions, a 7-page survey was mailed to them. Of the 380 Local Telementors, 200 completed and returned the survey which asked about the current status and perceived impact of their involvement in Telemation activities, as well as about the availability and use of telecommunications resources at their local sites. This survey provided the lion's share of data pertaining to the effectiveness and impact of the Telemation Project as a whole, and therefore a discussion of its results forms the basis of much of this final report .

2. **State Telementor Survey**: In April 1995, approximately one year following their training, a 7-page survey was mailed to the 20 State Telementors to determine the current status and perceived impact of their involvement in Telemation Project activities. All 20 of the State Telementors completed and returned their surveys.

3. **State Telementors' Reactions to Training**: At the close of each of the two State Telementor training sessions, written questionnaires were administered to solicit participants' feedback regarding the quality and usefulness of the training itself.

4. **State Telementors' Administrators' Reactions to Training**: At the close of the day-long training session provided to State Telementors' administrators, written questionnaires were administered to solicit the administrators' feedback regarding the quality and usefulness of the session.

5. **Observations of Local Telementor Trainings**: Two consultants were employed by Far West Laboratory to attend part of each of the 18 Training Institutes held in the local regions. Each consultant visited 9 of these trainings for one of the five total training days in order to gain a general sense of what was being covered and to identify particular issues that emerged in each session.

6. **State Telementors' + Partners' "Institute Reflections"**: Following each local training Institute conducted by the Telementors in the 18 regions, both the State Telementor and his/her Partner completed a brief questionnaire asking them to provide open-ended comments regarding their involvement in the Telemation project as a whole and about the 5-day training they had just conducted for the Local Telementors.

7. **Tracking and Coding of State Telementor E-Mail Communications**: To assist in identifying the extent to which the State Telementors used telecommunications strategies following their training sessions, an E-mail group called *telementors@eis.calstate.edu* was established and monitored. This group consisted of the 20 State Telementors, Telemation Partners, the California Technology project director, and the person responsible for providing ongoing follow-up coaching to the State Telementors. A total of 708 E-mail messages sent to this group between 12/6/93 and 12/31/94 were collected and coded.

8. **Summary of State and Telementors' Individual Curriculum Projects**: As a required task for their training, each of the State Telementors developed and implemented a lesson plan that incorporated California's curriculum and reform concepts and used telecommunications to support teaching and learning. These plans were prepared according to a common format, with the assistance of the Classroom Telecommunications Intervention Plan (C-TIP) (see Appendix B), developed by Far West Laboratory.

9. **Summary of Local Telementors' Individual Curriculum Projects**: As required of the State Telementors, the Local Telementors were also asked to develop and implement a lesson plan that incorporated the use of telecommunications to support the curriculum. As of 4/25/95, approximately 15 of the 380 Local Telementors had completed their projects. The consultant employed by Telemation Project to provide ongoing coaching and follow-up for the State Telementors is currently in the process of collecting and summarizing these locally-generated lessons for dissemination via World Wide Web and CD ROM in the Fall of 1995.

10. **Interviews with Project Leaders**: To supplement the written data collected over the course of the project, one-hour interviews were conducted with several members of the project leadership team and key project staff.

11. **Classroom Implementation Forms**: In all, 380 Local Telementors received training from the State Telementors during the summer of 1994. These Local Telementors, at the close of their training sessions, were given a survey to take back with them for completion at a later date. The survey assessed the extent to which the Local Telementors were using the skills learned in their training back in their own classrooms. As of 4/26/95, approximately 25 of these forms had been completed and returned.

12. **Document Review**: Written materials generated over the course of the project (e.g., meeting minutes, organizational charts, brochures, workplans) were reviewed as they pertained to particular evaluation questions.

Following is a table indicating which of the data sources were used to answer the specific evaluation questions.

Telemation Evaluation Questions	Data Sources										
	Local 'T' Survey	State 'T' Survey	State 'T' Reactions to Training	State 'A' Reactions to Training	Observations of Local 'T' Training	State 'T' & Partners' Institute Reflections	State 'T' E-Mail Tracking & Coding	State 'T' and/or Local 'T' Curriculum Projects	Interviews with Key Players	Classroom Implementation Forms	Document Review (e.g., mtg. minutes)
A. Organizational Structures, Participants and Partners											
A1. What structures, roles, and processes were created to coordinate the Telemation Project as a whole?									✔		✔
A2. What constituent groups were represented in the design and conduct of the Telemation Project?									✔		✔
A3. Who were the actual project participants and how were they selected?									✔		✔
B. Implementation, and Follow-up Resource Assessment											
B1. What kind of training and follow-up supports were provided to State and Local Telementors via the Telemation Project?					✔				✔		✔
B2. What kind of resources or supports were provided to State and Local Telementors from their own district sites or regional partners?	✔	✔				✔					
B3. Who attended the training sessions and participated in follow-up activities?									✔		✔
B4. To what extent and about what did project participants communicate "horizontally" (i.e., with each other) and "vertically" (i.e., with project leadership)?	✔	✔					✔		✔		

Telemation Evaluation Questions	Data Sources										
	Local 'T' Survey	State 'T' Survey	State 'T' Reactions to Training	State 'A' Reactions to Training	Observations of Local 'T' Training	State 'T' & Partners' Institute Reflections	State 'T' E-Mail Tracking & Coding	State 'T' and/or Local 'T' Curriculum Projects	Interviews with Key Players	Classroom Implementation Forms	Document Review (e.g., mtg. minutes)
B5. How many and what types of technology-based curriculum plans did participants develop?								✔			
B6. To what extent are participants implementing their curriculum plans within their own classrooms?	✔	✔								✔	
B7. What challenges or barriers emerged over the course of Telemation project implementation?	✔	✔			✔	✔			✔		✔
B8. What facilitative factors emerged as important over the course of implementation?	✔	✔			✔	✔			✔		✔
C. Participant Satisfaction with Training and Support											
C1. How satisfied were State and Local Telementors and administrators with the training activities associated with the project?	✔	✔	✔	✔		✔					
C2. How satisfied were State and Local Telementors with the nature and degree of follow-up support provided by the project?	✔	✔	✔	✔		✔					
D. Impact on Teachers, Students, and the School											
D1. To what extent has the Telemation Project had an impact on participating **teachers** or other school staff members?	✔	✔				✔			✔		

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Telemation Evaluation Questions	Data Sources										
	Local 'T' Survey	State 'T' Survey	State 'T' Reactions to Training	State 'A' Reactions to Training	Observations of Local 'T' Training	State 'T' & Partners' Institute Reflections	State 'T' E-Mail Tracking & Coding	State 'T' and/or Local 'T' Curriculum Projects	Interviews with Key Players	Classroom Implementation Forms	Document Review (e.g., mtg. minutes)
D2. To what extent has the Telemation Project had an impact on **students** (e.g., on student learning, attendance, self-confidence, etc.)?	✔	✔									
D3. To what extent has the Telemation Project had an impact on the larger **school community and/or the community at large?**									✔		✔
E. Overall reactions to the Telemation Program											
E1. To what extent do key players and participants view the overall Telemation model as effective?	✔	✔				✔			✔		
E2. To what extent do key players and participants view the results obtained via the overall Telemation Project as worth the cost and effort involved?	✔	✔				✔			✔		

II. Evaluation Findings and Analysis

In the following section, each evaluation question is listed along with explanatory and evaluative information derived from the project records, interviews, and the evaluation instruments previously discussed. Included are the data collected from survey questions and other data sources that relate to the stated evaluation question. Overall conclusions are drawn as appropriate, given the particular data available with respect to each question.

A. Organizational Structures, Participants, and Partners

Question A1: What structures, roles, and processes were created to coordinate the Telemation Project as a whole?

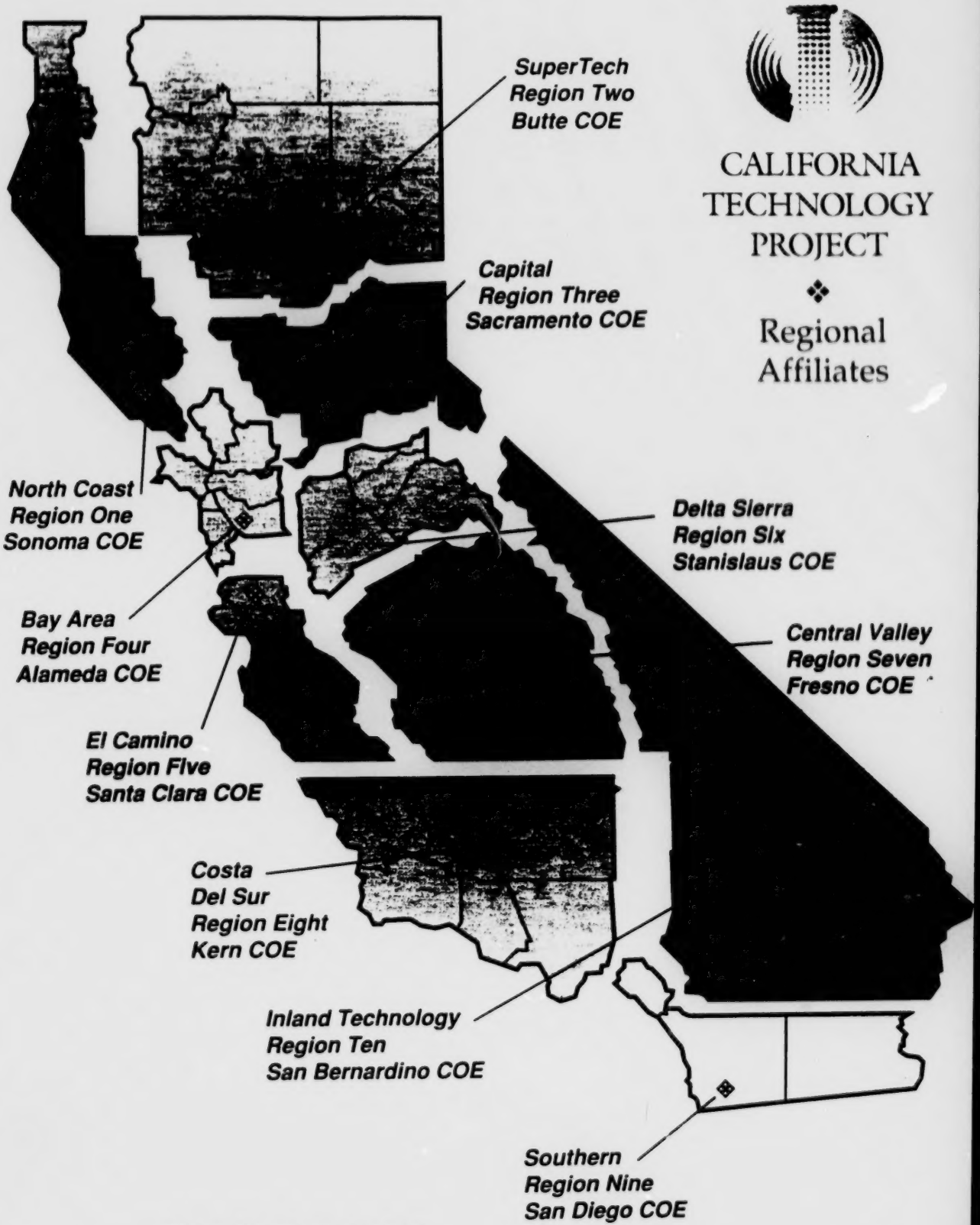
Launched in mid-1993 as part of the larger California Technology Project (CTP), the Telemation Project has involved roughly 950 teachers and administrators throughout the state. The project was designed as a collaborative effort to provide educators with professional development in the use of telecommunications networks and learning resources available on-line to enhance teaching and learning. Professional development activities emphasized the incorporation of telecommunications resources within site-level planning, curriculum, and teaching and learning strategies for the purpose of benefiting both teachers and students. The facilitation of supportive, collegial communication among participating teachers was built into the overall design of the project.

The Telemation Project involved multiple players and partners at various levels of the state educational system. The key structures, roles and processes that it comprised include:

Telemation Project Leadership. The California Technology Project was responsible for day-to-day project management, with the Fresno County Office of Education acting as the lead Local Educational Agency and fiscal agent. The California Department of Education's Educational Technology Division provided project monitoring, and Far West Laboratory for Educational Research and Development conducted project evaluation and research activities.

Telemation Project Partners. Multi-agency collaboration was seen as a key element of the Telemation Project. Thus, at the project's inception, organizational partnerships were established with 18 different educational organizations across the state (see map on following page). Partners met quarterly to plan and coordinate project activities. Roles varied somewhat across regions, but essentially, partner agencies were responsible for:

- Designing and implementing a process for selecting the State Telementors
- Selecting Local Telementors for participation in the local training institutes
- Assisting State Telementors to plan and conduct regional training institutes and follow-up support activities
- Providing fiscal resources for Local Telementors
- Assisting the Telemation Curriculum Developer and the State Telementors to finalize Local Telementors' curriculum projects



CALIFORNIA
TECHNOLOGY
PROJECT

❖

Regional
Affiliates

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Managing and Resource Partners included (See Appendix D for detailed list):

1. Alameda County Office of Education
2. Association of California School Administrators (ACSA)
3. Butte County Office of Education
4. California Arts Project
5. Fresno County Office of Education
6. Imperial County Office of Education
7. Kern County Office of Education
8. KQED/Learning Link
9. Los Angeles Educational Partnership
10. Mendocino Unified School District
11. Sacramento County Office of Education
12. San Bernardino County Office of Education
13. San Diego County Office of Education
14. San Luis Obispo County Office of Education
15. Santa Clara County Office of Education
16. Sonoma County Office of Education
17. Stanislaus County Office of Education
18. Ventura County Office of Education
19. Computer Using Educators (CUE)
20. California Media and Library Educators Association (CMLEA)
21. Far West Laboratory (FWL)

State Telementors. Twenty State Telementors were selected to serve as peer coaches to school staff in their regions. As such they were expected to participate in training activities, develop curriculum projects using on-line information resources, and to conduct local training institutes for Local Telementors selected within their own regions. Specifically, each State Telementor was responsible for:

- Participating in two training sessions (2.5 days each) held in December 1993 and March 1994 that focused on curriculum development, group facilitation skills, and telecommunications usage.

- Developing and implementing a curriculum project in individual classrooms that integrated telecommunications-based resources and activities into California framework-based curricular content, emphasizing the instructional strategies featured in California's reform documents. These projects will be made available on-line to other teachers in the Fall of 1995, and are included in Appendix B.

- Offering a five-day Local Telemation Institute and follow-up support for 24 participants from their region during the late spring and summer of 1994. During the winter and spring training sessions, State Telementors received assistance and guidelines to assist them in designing their local Institutes. It was expected that each State Telementor, with the assistance of Regional Partners, would tailor the materials to the needs of their particular region.

Half-Time Curriculum Developer. The Telemation Project hired a half-time Curriculum Developer to assist with the training and to serve as a resource to State Telementors as they developed and implemented their curriculum projects. In addition to developing the initial curriculum project planning guide, the Curriculum Developer fielded questions from State Telementors, solved problems with them as they designed lessons, worked with them to enhance the link between planned learner activities and desired learner outcomes, and prompted them to tie their activities to California's reform and curriculum documents.

Local Telementors. Selected in the spring of 1994 by the project partners, each of the 380 Local Telementors participated in a 5-day local training institute conducted by the region's State Telementor. Approximately 24 Local Telementors participated in each region. At these institutes, Local Telementors initiated plans for developing telecommunications curriculum projects (modeled after those developed earlier by the State Telementors). In addition, these Local Telementors' school principals were encouraged to attend training conducted jointly by the Association of California School Administrators (ACSA) and Telemation Project Staff.

TeleLearning Mobile Unit (TMU). Serving as the vehicle for conducting the local training institutes, the TMU is a 48-foot semi-trailor housing 24 computer workstations. Specially designed to allow all 24 participants to be on-line simultaneously, it was intended to ensure that at least 50% of the training session would consist of hands-on Internet exploration.

The TMU housed 12 Macintosh Quadras and 12 Windows-based workstations alternating along both sides of the trailer's interior, with an additional one of each platform at the trainer's station located at the front of the truck. The 12 Windows machines also had video cards installed to allow participants to view videos during training sessions. On-line connections were established via satellite transmission to a land-based Internet connection. The trailer is self-contained with an on-board electrical generator.

CORE/Telis On-Line Service. One of the project's goals was to establish a statewide community of learners who would use e-mail to communicate easily and freely with each other. All project participants were initially connected to CORE via CSUNet using the newly developed GINA telecommunications software. Due to high levels of statewide use, CSUNet was not accessible on a regular basis. To address this problem, the CTP Management Team established a new on-line service called Telis (TeleLearning InfoSource), an on-line service for the exclusive use of Telemation Project participants (i.e., State and Local Telementors and CTP support personnel). All participants began use of this new service in February 1995, and were encouraged to share resources and professional concerns as part of their ongoing involvement in the Telemation Project.

Telis provides Internet services including e-mail, ftp, telnet, gopher, WWW, and is compatible with Netscape, Mosaic, vt100 and GINA. It is accessible via 14.4, 800#, dial-up SLIP connections.

Business Support. The Telemation Project received additional financial and in-kind support from a variety of business partners. These business partners and their contributions are listed below.

- **Adobe Systems, Inc**. donated a license for Acrobat reader software that was loaded onto each of the TMU's computers.
- **Compaq** donated $100,000 worth of PCs with CD-ROM drives for the TMU, as well as a Proliant Server for Telis.
- **Farallon Computing, Inc**. provided networking products and technical expertise in getting Macs and PCs to operate on the same network.
- **GTE** provided technical assistance, extensive financial support of the TMU, and graphic and printing support.
- **Information Access, Inc**. provided CD ROMs for each computer.
- **Microsoft Corp.** equipped each TMU computer with software including MS Word, Excel and PowerPoint.
- **Satellite Technology Management, Inc**. provided technical expertise and guidance regarding the TMU's satellite and land-based connections.

Question A2: What constituent groups were represented in the design and implementation of the Telemation Project?

Project Design. The 1992 passage of California's SB 1510, the *Morgan-Farr-Quackenbush Educational Technology Act*, provided for the reauthorization and restructuring of the state's existing educational technology programs outlined in California's Educational Technology Master Plan. The Education Council for Technology and Learning (ECTL), an advisory committee to the State Board of Education, suggested the issuance of a competitive request for proposals to solicit bids for developing a comprehensive statewide system of providing professional development to educators and administrators in instructional uses of telecommunications technology. The current Telemation Project was proposed and funded in response to this RFP.

The Telemation Management Team that developed that proposal consisted of leaders from the Fresno County Office of Education, the California Technology Project, and Far West Laboratory for Educational Research and Development. This team, in response to the RFP and in a short period of time, assembled a diverse array of project partners who designed the Telemation staff development model. In arriving at this design, input from a variety of educators and administrators throughout the state was sought in order to ensure the relevance of the model to practitioners from diverse localities.

Project Implementation. The Telemation Project was designed to provide training and ongoing support to educators and administrators throughout the State of California. Due to the state's large size and vast diversity, services were provided in each of the 10 CTP regions. Offering services regionally in this fashion was designed to ensure adequate access and opportunities among constituents from urban, rural, and suburban locales, as well as among constituents representing the state's array of ethnic and linguistic backgrounds. In all, 18 different areas of the state were directly served by the project.

Question A3: Who were the project participants and how were they selected?

Telemation Project Partners

A listing of the Telemation Managing and Resource Partners is provided in Section II, A. Telemation Project Partners were selected from among the 60+ agencies that actively participate as regional affiliates in the CTP's resource services. Partners were included on the basis of voluntary regional commitments to provide ongoing support to Local Telementors.

State Telementors

Project Leadership worked with the Project Partners to develop and implement a process for recruiting and selecting the State Telementors. The group began by identifying and agreeing upon the selection criteria (which they later felt were extremely effective in producing high-quality participants).

Eligibility Criteria. All State Telementors were required to be currently working directly with K-12 students on a regular basis. In addition, they were required to provide assurances that they would have access to telecommunications equipment and resources at their school site prior to their involvement in the project. (All State Telementor applications were originally supposed to be submitted electronically. However, this did not occur; State Telementors submitted hard copy applications instead).

Selection Criteria. Beyond those basic eligibility requirements, there were three broad criteria used in selecting from the pool of potential State Telementors:

- Solid **teaching background** in K-12 settings.
- Strong **group facilitation** experience (e.g., the person had previously conducted staff development activities or been active on their school site councils).
- Knowledge and use of **telecommunications**. (Of the three criteria, this one was actually emphasized the least, because the partners felt that these skills could and would be taught directly within the training session, whereas skills in the other two areas were essential).

Once the Leadership Team and Partners had agreed on selection criteria and developed the boilerplate application, each Partner agency customized the application and began the recruitment process for their region. (Sample application and recruitment materials are included in Appendix C). Each Partner selected three top candidates and sent that information back to a Telemation selection committee, which made the final decisions.

Local Telementors

Selection by Telemation Partners. Using recruitment and selection procedures similar to those developed for selecting the State Telementors, the Telemation Partners were individually responsible for selecting the 24 Local Telementors in their region. While certain aspects of the recruitment and selection process were substantially similar across regions (e.g., the application forms), each Partner employed a somewhat different process.

Varying Role of State Telementors in Selection Process. The role played by State Telementors in selecting the Local Telementors varied widely across regions according to Regional Partners' preferences.

In some regions, State Telementors were very involved in the process (e.g., participated in the conduct of interviews), but in others they had no role whatsoever.

Many aspects of the partnership between Telemation Partners and State Telementors were interpreted differently across regions, and were not centrally prescribed by project leadership. This was unfortunate, since an important role of the State Telementor was to serve as a group leader and mentor from the beginning of the project.

Administrators

One of the State Telementors from the Association of California School Administrators (ACSA) conducted a two-part Telemation training institute for 22 of the State Telementors' local administrators. These administrators were identified and approached directly by the State Telementors for participation in the training sessions.

B. Implementation and Follow-up Resource Assessment

Question B1: What kind of training and follow-up support services were provided to State and Local Telementors and administrators via the Telemation Project?

State Telementors

Two Training Sessions. State Telementors attended two 2.5-day training sessions held in December 1993 and March 1994 that focused on the following content areas:

- Telemation Project Overview
- Information Literacy Defined
- California's Curriculum Frameworks & Reforms
- Telecommunications Resources and Search Strategies
- Designing a Telemation Curriculum Project
- Training & Group Facilitation Skills
- Ethical Issues in Telecommunications Usage
- The Change Process: Becoming Change Agents
- Meeting the Needs of Learners with Limited English Proficiency
- Local Telemation Institute Planning and Development
- Orientation to the TeleLearning Mobile Unit (TMU)

Training sessions were designed to be participative and interactive in nature, and emphasized hands-on telecommunications exploration via Internet searches and guided demonstrations. The guiding focus was on identifying ways in which telecommunications resources could be used as a tool to support teaching and learning. As part of their preparation, State Telementors were required to develop a plan for an individualized telecommunications-based curriculum project.

On-Line Communications and Team Support. State Telementors were encouraged to utilize their access to telecommunications to communicate regularly with each other as a dynamic team. An email group was created on CORE (CSUNet) to facilitate communication among and between the state Telementors, the Telemation Partners, and California Technology Project Personnel. (Details of this communication are described under Question B4 of this report). State Telementors were encouraged to keep in touch via email for purposes of assisting each other with curriculum project development and with planning of their local institutes. In addition, they were encouraged to contact the project's Curriculum Developer for consultation and technical assistance.

These types of "horizontal" communications were viewed as a critical component of the project, and were intended to be an ongoing source for information and assistance among State Telementors and among each group of Local Telementors.

Local Telementors

Five-day Local Training Institute. During the summer of 1994, each of the State Telementors and Regional Partners planned and conducted a 5-day Local Telemation Institute for 24 Local Telementors selected in each region. Guidance and support materials developed by Telemation project staff were provided to State Telementors to assist in designing the Training Institutes, but each State Telementor was responsible for tailoring those materials to meet the unique needs of their particular region. Thus, while certain elements were common to all of the

Local Institutes (e.g., extensive amounts of hands-on computer time), there was also considerable variation across the training sessions.

On-Line Service and Support. In February, 1995 a new online service called "Telis" (TeleLearning InfoSource) was initiated for the exclusive use of State and Local Telementors and support personnel for one year. Telis provides all participants with Internet access and services including email, ftp, telnet, gopher, and World Wide Web. Local Telementors were encouraged to communicate with one another and with their State Telementor(s) via email in order to request and receive assistance or ideas regarding effective instructional uses of telecommunications resources.

Administrators

Three-day Administrator Training. In support of the 1994 summer training of Local Telementors, the Association of California School Administrators (ACSA) and the Telemation project co-sponsored a three-day administrators' training institute for 21 of the State Telementors' administrators (March 22-23, May 4). The training was designed to prepare the 20 administrators to provide six hours of telecommunications training for the administrators of the Local Telementors, to occur in conjunction with the Local Telemation Institutes.

The first two days of administrator training (March 22-23) focused on:

- Telemation project overview (ACSA's role, Telementor's role)
- Information presentations by PacBell and Smart Valley
- Connecting to CORE via the interface GINA
- Sharing of participants' expertise
- Description of teacher projects
- Developing a training outline
- Sharing training designs
- Supporting teacher Telementors
- Developing an awareness of on-line resources
- Providing hands-on telecommunications skill development
- Outlining a support plan with teacher Telementors to implement projects at local sites

The third day of training (May 4) focused on:

- Refining the training outline
- Conducting practice runs with administrators in the TMU

Telemation Administrators' Role. Participating administrators were expected to come to an agreement about what administrators should know and be able to do in support of the Telemation project, and to create a Training Institute that would accomplish those objectives.

Telemation Administrators' Commitment. Each of the 21 participating administrators was responsible for:

- Attending the ACSA/Telemation Institute sessions
- Developing and delivering 2 afternoon training sessions for local administrators
- Arranging opportunities for one day of on-line work
- Obtaining a phone line and modem at work site
- Being on-line at least once a week

Question B2: What kind of resources or supports were provided to State and Local Telementors from their own district sites and regional partners?

State Telementors

Access to Necessary Equipment. All of the State Telementors reported having access to the equipment necessary to implement their curriculum projects.

Support from Local Administrators during & after the Training Institute. Just over half (58%) of the State Telementors reported that their principal or assistant principal had shown support by attending the Telemation Training Institute.

Nearly all of them (94%) reported moderate to high levels of support for using telecommunications in the classroom from these individuals following the training. The specific breakdown was:

High.....47%
Moderate.....47%
Little.....6%
None.....0%

Support from Telemation Partners. The specific kinds of support provided by the Telemation Partners is described under Question A1. Most (70%) of the State Telementors reported that support from their Telemation Partner was often available, with the other 30% rating the support as being available sometimes.

When Partner support was accessed, it was seen by 75% of the State Telementors as being often useful. A small number (5%) indicated that the support they received from their Telemation Partner was never useful to them.

Support from the District. Just over half (58%) of the State Telementors reported having ongoing access to a local district technical support person, and 90% of these individuals found that support to be adequate.

Asked about their degree of use of staff development opportunities provided by the district, 65% of the State Telementors made moderate to high use of such opportunities.

As for the usefulness of these activities, 75% of the State Telementors found them to be useful at least sometimes. The specific breakdown was as follows:

Often useful.....30%
Sometimes useful.....45%
Not at all useful.....20%

Teacher Involvement in District Technology Plans. The majority (80%) of respondents reported that their districts are currently implementing an educational technology plan, while 15% said there was no such plan, and 5% weren't sure.

Of those respondents who reported that such a plan was in place, nearly all (94%) reported that they themselves or other teachers were involved in the development of the district's educational technology plan.

School Funding for Telecommunications. Less than half (42%) of respondents reported that their school had funding specifically earmarked for telecommunications, while 52% reported no such available funding, and 5% weren't sure.

Following are the percentages of respondents who indicated the availability of particular funding sources to support telecommunications at their school sites:

General Fund.....55%
School Improvement Program (SIP).....55%
SB 1510 Grants.....55%
Chapter 1.....50%
Business contributions.....50%
Additional funding sources not listed.....3%

Resources Available in the Classroom. State Telementors were asked to indicate the number and type of telecommunications resources available in their own classrooms:

- **Phone Line**: 89% reported having access to a phone line in their classroom, while 11% had no phone access .
- **Computer(s)**: All of the State Telementors had access to at least one computer in their own classrooms. 53% reported having between 1-5 computers in their classrooms, 47% reported having six or more computers, and 32% had more than 11 computers.
- **Modem(s)**: 89% of respondents reported having a modem in their classroom, compared to 11% who had no classroom modem.
- **Networks (LAN/WAN)**: The majority (74%) of participants reported being connected to a local or wide area network, while one-fourth (26%) had no such access.

Local Telementors

Access to Necessary Equipment: The majority (83%) of the responding Local Telementors reported having access to the equipment necessary for implementing their curriculum projects. However, **17% reported that they did not have such access.** This figure is high given that all of the Local Telementors were required to provide assurances from their administrator of adequate levels of administrative and material support prior to being selected for participation in the project.

Support from Local Administrators during & after Training Institute. Roughly half (49%) of the respondents reported that their school principal or an assistant principal had attended a Telemation Training Institute.

When asked about the level of support provided to participants by their principal/assistant following the Telemation Institute, 78% of the respondents reported receiving moderate to high levels of support from them. The specific breakdown was:

High.....51%
Moderate.....47%
Little.....14%
None.....8%

Support from District. Local Telementors were asked whether or not they had ongoing access to a local technical support person, to which 67% replied 'yes' and 33% replied 'no.'

Asked about the adequacy of the support provided, 72% reported it as being adequate, while 28% reported it as inadequate.

Asked about their degree of use of staff development opportunities provided by the district, 58% reported making moderate to high use of such opportunities, while 42% indicated low use.

When asked to rate the usefulness of these activities, a fairly high proportion did not answer favorably. The specific breakdown was as follows:

Often useful.....19%
Sometimes useful.....56%
Not at all useful 25%

Teacher Involvement in District Technology Plans. The majority (78%) of respondents reported that their districts are currently implementing an educational technology plan, while 13% said there was no such plan, and 9% weren't sure.

The same number (78%) also reported that they themselves or other teachers were involved in the development of the district's educational technology plan, while 13% reported no teacher involvement, and 8% weren't sure.

School Funding for Telecommunications. Less than half (48%) of respondents reported that their school had funding that was specifically earmarked for telecommunications, while 38% reported no such available funding, and 14% weren't sure.

Following are the percentages of respondents who indicated the availability of particular funding sources to support telecommunications at their school site:

General Fund.....40%
School Improvement Program (SIP).....40%
SB 1510 Grants.....32%
Chapter 1.....32%
Business 32%
Additional funding sources not listed.....35%

Resources Available in the Classroom. Local Telementors were asked to indicate the number and type of telecommunications resources available in their classrooms:

- **Phone Line**: 86% reported having access to a phone line in their classroom, while 14% had no phone access .
- **Computer(s)**: 38% reported having six or more computers in their own classrooms (25% had more than 11 computers), and 56% reported having between 1-5 computers in their classrooms. 6% had no computers in their classrooms at all.
- **Modem(s)**: 83% of respondents reported having a modem in their classroom, compared to 14% who had no classroom modem, and 3% reported having more than 6 modems.
- **Networks (LAN/WAN)**: 46% of participants reported being connected to a local or wide area network, while 54% had no such access.

Question B3:	**Who attended the training sessions and participated in follow-up activities?**

State Telementors

Number of Participants: 20 State Telementors from 18 regions throughout California participated in the trainings and follow-up sessions.

Job Title: Breakdown by job title (spanning all grade levels) was as follows:

Full-time teacher.....70%
Library/Media Specialist.....10%
Administrator 15%
Resource Teacher..... 5%

Grade level(s) served: Following are the grade level(s) served by the State Telementors (some serve more than one category):

Elementary (K-5).....25%
Middle (6-8).....38%
Secondary (9-12).....38%

Students with Special Needs: The majority of State Telementors reported serving students with special needs in their classrooms. The average percentage of students from their classes who fell into the following categories was:

Chapter 1 students.....43%
Bilingual students 29%
Special Ed. students.....19%
Gifted students.....20%

Local Telementors

Number of Participants: 380 Local Telementors from the 18 regions were trained by the State Telementors.

Job Title: Of the total sample who completed the Local Telementor mail survey (n=200), the job title breakdown was as follows:

Full-time teacher.....82%
Library/media specialists 10%
Administrators..... 3%
County Office staff..... 2%
Part-time teachers..... 2%

Grade level(s) served: Following are the grade level(s) served by responding Local Telementors:

Elementary (K-5).....34%
Middle (6-8).....38%
Secondary (9-12).....34%

Students with Special Needs: Again, the majority of Local Telementors reported serving students with special needs in their classrooms. The average percentage of students from their classes who fell into the following categories was:

Chapter 1 students.....39%
Bilingual students 25%
Special Ed. students..... 3%
Gifted students.....12%

Administrators

Twenty-one of the State Telementors' administrators attended the administrators training session co-sponsored by the Association for California School Administrators (ACSA) and the Telemation project.

Question B4: To what extent and about what did project participants communicate "horizontally" (i.e., with each other) and "vertically" (i.e., with project leadership)?

Overall Frequency of Communication among Project Participants: State and Local Telementors were asked via the mail surveys how frequently they were communicating with various other groups, project participants, and with their local colleagues. Their mean responses are as follows:

Frequency of Communication with:	State Telementors' Mean Response: (1=never, 3=somewhat frequently, 5=very frequently)	Local Telementors' Mean Response:
State Telementor(s)	3.3	3.0
Local Colleagues	3.4	3.1
Project Leadership	2.9	2.6

As can be seen, State Telementors have kept in fairly frequent contact both with each other and with their local colleagues, and somewhat less frequent contact with project leadership. The same general pattern is evident for Local Telementors.

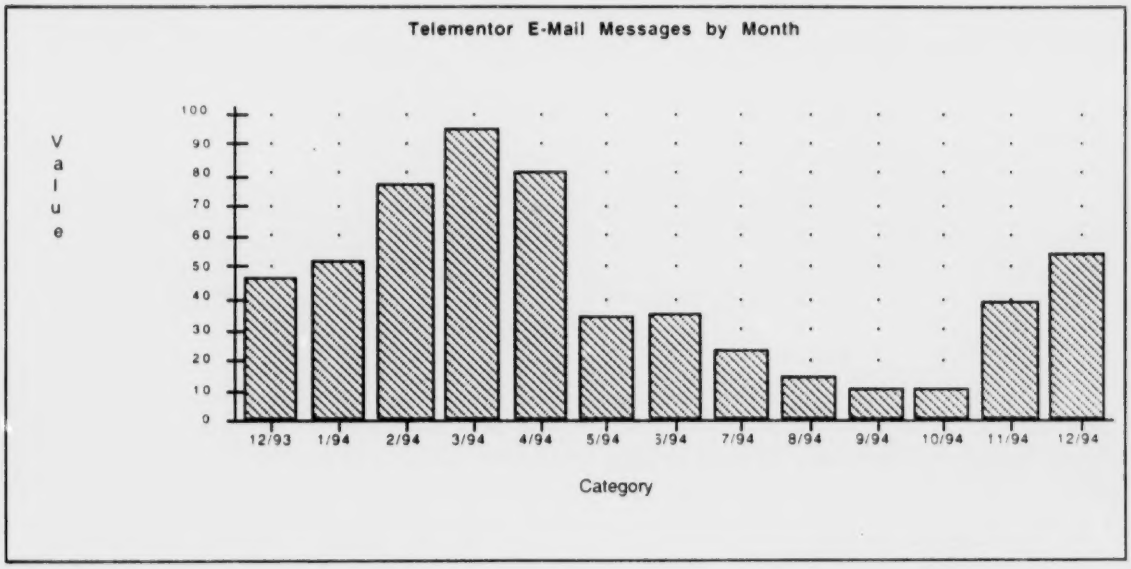
Frequency of E-Mail Communication among Project Participants: In the early phase of the Telemation project, an email group called "telementors@eis.calstate.edu" was created in order to facilitate communication among and between the State Telementors, the Telemation Partners, and California Technology Project personnel.

During the one-year project period from 12/6/93-12/31/94, a total of 708 e-mail messages were collected and categorized. Below are the frequency counts and percentages for each participant category:

Project Group:	Number of Messages Sent and Received:	Percent of Total Message Volume:
State Telementors	571	81%
Telemation Partners	33	5%
CTP Staff	104	15%

Rate and Type of E-Mail Communication among State Telementors: State Telementors were by far the heaviest users of the email group, accounting for 81% of its activity. All but one Telementor used the email group to exchange messages throughout the year, and most used it on a fairly regular basis.

Rate of use varied over time. As shown in the table below, usage began at a medium rate, increased during the time that projects were being developed, tapered off during the summer and fall when Telementors were conducting their local institutes, and increased again at the end of the year.



State Telementors used the e-mail group to communicate on a variety of topics. The following table depicts the message categories that emerged over the course of year, the frequency with which they occurred (in descending order of the 571 total messages), and an example of each type of communication.

E-Mail Message Category:	Frequency: (n; %)	Sample Message:
Forwarding of sources of on-line information	92; 16%	"Here's detailed info re: comet/Jupiter collision in July, 1994, FYI..."
Requests for telecommunications-related info or ideas	58; 10%	"If one of you saved xx's msg. about the History Telnet, could you forward it to me?"
Response to an info request about hardware or software	58; 10%	"Binhex & I don't have a relationship either. I too have seen some funny scripts...This isn't very user-friendly software..."
Response to a Telemation Project-related request	54; 9%	"I too hope there is more training time put on GINA at the April institute..."
Information sharing re: the Telemation project	50; 9%	"If you have been frustrated trying to read attached files for your project, one can append a text file from mail pull-down menu in GINA."
Forwarding of telecommunications-related information	49; 9%	"This is a cheat-sheet on installing & using GINA" [developed by a local Telementor & forwarded by his state Telementor to the email group].
Forwarding of non-telecommunications-related information	45; 8%	"I found this both interesting & informative" [forwarded material on educational reform & multicultural education].
Request for information re: hardware or software	42; 7%	"Do any of you have pointers to an Internet site with Mosaic info?"
Response to a general request	38; 7%	"Count me in on the task force. I'll try to make the 7:30 meeting."
Personal exchanges or greetings	37; 6%	"Hope everyone has a great vacation & is taking some time off"
Telemation Project-related request for information	14; 2%	"Can anybody help xx w/ this question, since I am not really bi-platform yet." [request by state T on behalf of local T re: Mac or Dos platforms].
Response to hardware/software-related requests	12; 2%	"One big problem which can occur with a 9600/14.4K modem has to do with the Mac to modem cable. It must be a 'hardware handshaking cable' or hi-speed cable..."
Response to request for presentation material	9; 2%	"I can do that if you mean July 7." [response to request to demonstrate Peacenet at local institute].
Request for info to help with doing presentations	7; 1%	"Please forward to me any info that you think would be appropriate for a District mgmt. team presentation."
General request	6; 1%	"XX would like to hear from you if you use the NASA video & if it was helpful..."

Question B5: How many and what types of technology-based curriculum plans did participants develop?

State Telementors

Number of Plans Developed: The 20 State Telementors produced 19 technology-based curriculum projects. (The 20th State Telementor designed and conducted a Training Institute for administrators instead of completing a curriculum project). Key features of the curriculum projects are depicted in a table according to subject area addressed, intended grade level(s), project length, and types of technology employed. This chart is in Appendix B, along with the curriculum projects are included in full.

Types of Plans Developed: Projects employed a variety of instructional strategies and telecommunications resources and were required to incorporate the concepts found in California's curriculum frameworks and reform documents.

Local Telementors

Number of Plans Developed: Most of the 380 Local Telementor curriculum plans are still in progress. As of the end of April, 1995, approximately **15 had been completed** and returned to the Telemation Curriculum Specialist, who will continue to collect and sort these lessons as they are received. The Telemation Project will make all of the curriculum projects available on-line in the Fall of 1995.

Types of Plans Developed: As part of the mail survey, the Local Telementors were asked to list the subject area(s) and grade level(s) addressed by their curriculum projects. The percentage of plans addressing the following subject area(s) is listed below:

Language Arts 55%
History/Social Science.....48%
Science.....43%
Mathematics.....24%
Visual/Performing Arts..... 8%

The grade level(s) targeted by the Local Telementor curriculum projects are:

Elementary (K-5).....41%
Middle (6-8).....34%
Secondary (9-12).....33%

Question B6: To what extent are participants implementing their curriculum plans within their own classrooms?

Curriculum Plans or Projects. Curriculum projects were developed by each of the participating State and Local Telementors and were intended to comprise the teaching activities that would incorporate the use of telecommunications tools and resources facilitated by the Telemation project. The decision to apply this model was based on previous research conducted on the California Model Technology Schools, which have provided teachers with a reason to use the technology. Additional research on the Monterey Model Technology Schools (Cradler 1992), Cupertino Model Technology Schools (Barnett 1992), and more recently with the Department of Defense Dependent Schools

(Cradler 1995), clearly indicates that technology implementation cannot be educationally relevant and succeed unless teachers are directly involved in constructing projects for which they can apply technology to address specific needs of the particular project.

Use of the Curriculum Project would also provide for documentation of how each of the Telementors apply technology, a basis for evaluating the classroom impact of technology, a vehicle to communicate and share telecommunications applications on-line. Additionally, these plans were intended to help to define 'exemplary' applications of telecommunication for potential expansion and adaptation. Responses by Telementors on the use of Curriculum Projects include:

State Telementors

Access to Necessary Equipment: All of the State Telementors reported having access to the equipment necessary to implement their curriculum projects.

Classroom Implementation: All of the State Telementors reported having developed and implemented their curriculum projects within their own classroom settings.

Plans for Continuation or Expansion: Most (78%) of the State Telementors reported that they plan on continuing or expanding these projects in the future, and all of them expressed an interest in assisting other teachers to adopt or adapt their projects.

Local Telementors

Access to Necessary Equipment: The majority (83%) of the responding Local Telementors reported having access to the equipment necessary for implementing their curriculum projects. However, **17% reported not having such access,** despite having provided an assurance of adequate levels of administrative and material support prior to project participation.

Classroom Implementation: As of February, 1995, the majority (86%) of the responding Local Telementors had already begun implementing the Telemation Curriculum Project within their own classroom settings. An additional 2% indicated that they were still in the process of planning their project and had not yet had an opportunity to begin implementing it. **Twelve percent indicated that they did not intend to implement a curriculum project**. This figure was somewhat high in light of the fact that project implementation was a requirement of involvement as a Local Telementor.

Plans for Continuation or Expansion: Regardless of the progress of project completion, nearly all (96%) of the Local Telementors planned to continue or expand on their curriculum projects in the future, and 93% expressed an interest in assisting other teachers to adopt or adapt them for use with other students.

Question B7: What challenges or barriers emerged over the course of Telemation project implementation?

Based on interviews of key staff members and a review of written project materials such as partner meeting minutes, the following implementation barriers were identified:

Inconsistent Expectations and Buy-In among Regional Partners. Prior to their involvement in the Telemation project, most if not all of the Regional Partners had already been identified as Partners and involved in the larger California Technology Project. The Telemation Project coordinator, who had been hired after these original partnerships had been formed, was

then responsible for bringing the group together as a state council to discuss, agree upon, and carry out the Regional Partner role for this project.

There were considerable differences among the partners in what this role should look like, as well as about which decisions would be made individually by partners or collectively by the state council. There was general agreement that there needed to be more up-front clarification of partners' and Telemation staff members' expectations in order for the project to proceed more smoothly.

Lack of Local Site Follow-Through on Commitment to Provide Telementors with Necessary Telecommunications Equipment and Resources. As a prerequisite to participating in the Telemation project, all State and Local Telementors had to provide assurances of their local sites' commitment to providing them with the equipment and resources needed to implement the telecommunications curriculum projects within their own classrooms.

Despite the fact that all of the local sites made this commitment, nearly 20% of the Local Telementors did not yet have access to the necessary equipment or facilities to carry out their projects at the time of the mail survey (Spring, 1995).

Telemation staff members attempted to remedy this situation by following up with individual sites to offer support or problem-solving assistance, but these efforts came to little avail. Project leadership were uncertain about how to prevent this problem in the future. They believed that either more stringent eligibility requirements would need to be in place up front, or that the project would need somehow to provide for participants' access to necessary telecommunications resources upon selection for participation.

Technical Difficulties with the TeleLearning Mobile Unit (TMU). The TMU, a 48' semi- trailer that housed 24 individual computer workstations, was one of the Telemation project's key innovations to support the delivery of telecommunications training to individuals throughout the state. As noted in another section of this report (Question C6), the TMU received mixed reviews even when it was functioning properly. However, there were many instances in which the TMU was either completely or partially inoperative during the scheduled Local Telemation Institutes.

These technical difficulties were the source of much frustration for Telementors and project leadership alike. Moreover, though all State Telementors and Regional Partners were urged to develop a back-up plan for their Institutes in the event of a problem, not all regions were equally able to adapt to the difficulties effectively. Specific problems and recommendations regarding the TMU are discussed more fully under Question C6.

Question B8: What facilitative factors emerged as important over the course of implementation?

Key project personnel were interviewed and documents reviewed to determine what, if any, factors emerged as particularly important in contributing to the effective implementation of the Telemation project. The following facilitative factors were identified:

Development and Implementation of an Extremely Effective Process for Selecting Telementors. Over and over again, the high caliber of the individuals selected to participate as Telementors was mentioned both by leadership staff and by project participants themselves. Despite some of the difficulties that occurred among the Regional Partners in arriving at consensus on certain issues, it was generally agreed that the Telementor selection process and criteria were

extremely effective, and that it would not be changed in the future. The emphasis on recruiting individuals with strong teaching and staff development backgrounds (with or without strong telecommunications skills) was seen as key. It was felt that the latter could be taught, whereas the teaching and group facilitation skills were essential prerequisites because they were not teachable in a short time frame.

The Development and Use of "Back-Up" Plans for Adapting to Technical Difficulties posed by the TMU. Though not universally adhered to among all 18 regions, a strong suggestion was made to State Telementors and Partners to be prepared for the possibility that the TMU might malfunction for at least part of their Local Telemation Institutes. In those instances in which the participants had thought through some alternative possibilities and were able to think quickly on their feet, it was found that the negative impact of those technical difficulties, while not eliminated, was greatly reduced.

C. Participant Satisfaction with Training and Support

Question C1: How satisfied were State and Local Telementors and administrators with the training activities associated with the project?

Training for State Telementors was developed and provided by the Telemation Project staff and the Telemation partners. The purpose of this training was to prepare the State Telementors to be trainers of the Local Telementors. Training included telecommunications planning, developing a "Curriculum Project", Curriculum reform, network resources, and a great deal of hands-on experience using the telecommunication resources, and the use of the TMU as a training vehicle.

State Telementors

Overall Level of Satisfaction with Training: There was considerable variability among the 20 State Telementors' perceptions of the training they received, though the majority indicated a high degree of satisfaction with it.

Specifically, they rated the **extent to which the training prepared them** to teach others how to incorporate the use of telecommunications within instruction. Below are their responses:

5 = Significant.....31%
4.....17%
3 = Moderate.....31%
2.....11%
1 = None 17%

The fact that **79% of the State Telementors felt that they had been moderately to significantly well-prepared** to carry out their instructional role with others is promising. Unfortunately, however, roughly **one fifth (28%) of the State Telementors rated their degree of preparation as low** (1 and 2 on the 5-point scale), raising questions as to what might have been done differently to accommodate the needs of this portion of the group.

Training Strengths: Positive features of the training that were mentioned repeatedly by the Telementors included:

- **Training materials** and guidelines were well-organized and thorough.
- The **on-line time** provided during the training (roughly 15 hours) was very useful.
- The **Telemation staff were perceived as competent and accessible** for valuable coaching and assistance. Participants noted that the sessions and materials were well organized, and they appreciated staff's efforts to remedy technical problems, even when they were unable to solve them.
- Of particular significance was the **quality of the rapport and mutual regard that developed among the State Telementors**. The quality of interactions that occurred within the group was extremely positive and supportive. Participants bonded very strongly, and even created a name (The "Quackers") and accompanying t-shirts for themselves. [The name arose in connection with the fact that during the training, some

individuals would at various times attempt to use the computers surreptitiously, only to be discovered by the others because of the telltale "quacking" noise made by the machines]

Comments made by the State Telementors about their group included:

"The Telementors are some of the best people I have worked with in the education field."

"Amazing energy and supportiveness. The most powerful group of teachers I have ever worked with."

"People problems were non-existent".

" am still totally excited by the people involved!".

"I've found the people and technology to be incredible."

"Wow!! What energy & what a great group of people!"

Training Areas for Improvement and Participants' Suggestions: While for the most part satisfied with the quality of the training they received, State Telementors mentioned several areas for improvement and some suggestions for strengthening the training. These included:

- Provide even **more on-line time** for participants to practice their searching and related telecommunications skills. Even with the relatively large amount of on-line time provided, participants still commented frequently on their desire and need to have more time to practice telecommunications skills.

- Many participants suggested **focusing the training on Netscape** as opposed to starting with CORE, GINA and gopher searching, because it was felt that the advent of Netscape made it no longer necessary to cover so many different tools. Recognizing that telecommunications technology is in a constant state of change, perhaps the message underlying this specific suggestion is that there **needs to be an emphasis on current, state-of-the-art programs and search tools.** However, Telemation/CTP staff are aware that many schools do not have the capacity to obtain and use these state-of-the-art technologies, and thus recognize the importance of training with a variety of programs and tools.

- Provide **more time on the workings of the TMU** and how to troubleshoot the inevitable technical (including hardware) problems that arise. State Telementors received only a 30-minute walk through of the unit, and many felt this was insufficient.

- Develop and **distribute the local institute training guide earlier** in the process. Some participants' local training schedule made it necessary for them to develop their training plan in the absence of such support materials and felt hindered by not having the guide.

- Provide more opportunities for State Telementors to **share each other's local institute plans**. Synthesize these and in the words of one participant, "pull the plans together to give them a common `look and feel.'"

- More clearly **differentiate between activities** designed to help in the development of local institute training plans and those designed to promote successful design and implementation of curriculum projects.

- Need to **strengthen the training component that focused on the needs of bilingual students**. The sample activities described in this component were seen as overly simplistic and not well tied to telecommunications.

Local Telementors

Overall Level of Satisfaction with Training: Immediately following each local training institute, Local Telementors were administered a questionnaire soliciting their reactions to the session. When considering the extent to which Local Telementors were satisfied with the quality of the training they received, it is important to remember that, in most cases, each State Telementor conducted his/her own Telemation Institute with the assistance of the Regional Partner. These sessions were deliberately not standardized. Thus, although there were a common set of guidelines and proposed activities, no two institutes were exactly alike.

Not only did each State Telementor implement his/her own training institute differently, the reliability and performance of the Telemation Mobile Unit (TMU) itself varied widely across these 18 different institutes, as did these sites' ability to adapt to the technical difficulties. Not surprisingly, then, the participants' reactions to and the results obtained via the eighteen regional institutes also varied.

Overall, participants' ratings were positive, with the average overall rating being 4.2 on a 1-5 scale, where 5=excellent and 1=needs to improve. There was, however, considerable variation (range = 3.1 to 4.8) between the average overall ratings across the regions.

Interestingly, as noted on in the chart on the next page, TMU technical difficulties alone did not result in lower overall ratings. In fact, the majority (11) of the regions did experience problems with the TMU. What seemed to make a difference was the presence or absence of alternative or back-up arrangements in the face of such technical difficulties. The Telemation management team had recommended that such back-up arrangements be made, but individual regions did not respond uniformly to that suggestion.

Local Telementor Satisfaction with Training

Region/Partner	Respondents	Mean Overall Rating
Santa Clara	23	4.6
Kern Co./Bakersfield	22	4.5
Mendocino	13	4.4
Alameda	19	4.2
Marin T-CAP	23	4.2
Butte	missing data	
Imperial *	22	4.1
LA-NASDC *	24	3.9
San Diego *	23	3.6
KQED *	21	3.1
Ventura **	18	4.8
San Luis Obispo **	25	4.5
Stanislaus **	25	4.5
San Bernadino **	24	4.4
Sonoma **	22	4.3
Sacramento **	23	4.0
Fresno **	missing data	
	Total n: 327	**Grand Mean: 4.2**

* TMU was not functioning properly for part of the training, and **no back-up arrangements were made** (mean rating for these was 3.7).

** TMU was not functioning properly for part of the training, but **alternative arrangements were made** to minimize the disruption to participants (mean rating for these was 4.4).

Note: The mean rating for **all 11 institutes in which TMU difficulties occurred** (* plus ** combined) was 4.2, the same as the grand mean for all sessions.

Extent to Which Training Provided Adequate Preparation. The mail survey sent to the Local Telementors in February 1995, (several months after participation in their local training institutes), asked about the extent to which Local Telementors perceived their institute as having prepared them to integrate telecommunications into instruction. Most respondents rated this item favorably. The majority (64%) gave a rating of 4 or higher on a 1-5 scale, with an average of 3.8. The specific response breakdown was:

5 = Significant.....32%
4.....32%
3 = Moderate.....23%
2.....10%
1 = None 2%

Training Strengths: Despite the differences in delivery format, content, and TMU performance across the 18 regions, there was a fair amount of consistency in the Local Telementors' perceptions of both the strengths and weaknesses of the local training institutes. Following are some of the positive features of the local training institutes that were mentioned repeatedly across regions:

- The **hands-on, on-line time** provided during the training (roughly 15 hours) was seen as extremely valuable.

- The **opportunity to network and share ideas with professional colleagues** was very much appreciated.

- The **esprit de corps** that developed among Local Telementor groups was mentioned repeatedly. A similar sense of team cohesion developed among Local Telementor groups as developed among the State Telementors (who, as noted previously, had named themselves the "Quackers"). Local Telementor groups also created names for themselves, including:

    * Netwits
    * Roadrunners
    * Virtual Voyagers
    * BATS (Bay Area Telemaniacs)
    * Bay Cruisers
    * Internet Invaders
    * DEVINE (De Valley InterNetworking Educators)
    * Sierra Pathfinders
    * Cyberstuffers

- Many participants commented favorably on the high **quality and knowledgeability of the presenter(s)** and the **organization of the training session** itself.

Training Areas for Improvement and Participants' Suggestions: Perceptions about areas for improvement included:

- Provide **even more on-line time** during the training.

- Provide **written, step-by-step "cheat sheets"** to assist participants with on-line searches.

- **Decrease the amount of talk time** during training: less lecture presentations, and fewer or shorter icebreaker exercises.

- Some problems involved trying to provide training in both Mac and PC platforms. Suggestions included either **providing better PC instruction and support or eliminating the PC platform altogether** and focusing exclusively on the Mac platform.

- Break participants into **ability groups** to accommodate differing skill levels.

- **Format and duplicate disks ahead of time** to avoid having to waste valuable in-class time for such routine tasks.

- Provide clearer, more specific **goals and objectives for each training day**.

Administrators

Following their training, the 21 administrators who participated in the administrators' training were asked to rate and comment upon its quality via a brief questionnaire. Following are the administrators' responses to the 5-point Likert-scaled items:

Questionnaire Item:	Mean response on 1-5 scale: (1=strongly disagree, 3=agree, 5=strongly agree)
Training Objectives: The objectives of the ACSA Telemation Institute were well-formulated, clear, and addressed the topic.	4.1
Training Content: The information presented was relevant to the objectives.	4.6
Understandability: The content was appropriate to my level of understanding and experience.	4.3
Expectations: The Institute met my expectations.	4.0
Overall Rating	4.7

Administrator Training Strengths: Positive features that were mentioned by the administrators in their open-ended comments included:

- The training was **well-organized**
- There was a sense of **teamwork** and collaboration
- The training emphasized **curriculum and instruction,** which was seen as very important

Administrators' Suggestions for Improving the Training: The participating administrators noted several ways in which the training might be improved, including:

- Provide more opportunities for **small group work** in order to avoid getting bogged down with too much lecture.
- Avoid **scheduling** the training concurrently with the ACSA conference; check out potential dates with participants ahead of time.
- Provide more materials and **assistance for the "non-techies"** (e.g., handouts of terminology, how-to sheets for guiding someone through GINA).

Question C2: How satisfied were State and Local Telementors with the nature and degree of Follow-up Support provided by the project?

Telemation partners included County Offices of Education, the 10 California Technology Project Regional Affiliates, one Instructional Television Agency, the Association of California School Administrators, and others. In addition to planning and monitoring training sessions, partners

were also responsible for providing follow-up support and assistance for the Telementors. Coordination of the partner activities was provided by the Telemation Project Management.

State Telementors

Via the mail survey and the Institute Reflection forms, State Telementors were asked to rate and comment on the nature and degree of follow-up support provided by the Telemation Project. Specifically, they were asked about support they received from their Telemation Partners, the Telemation/CTP staff, and the on-line support they received from other Telementors and Telemation staff.

State Telementors' Ratings of Support Received from Telemation Partners: The majority of State Telementors rated the support they received from their Telemation Partner quite highly. Almost all (95%) of them rated the support they received as often or sometimes useful. Sixty percent (60%) felt that their Partner's support was available to a great extent, 29% to a moderate extent, and 12% to a lesser extent.

Half (50%) of the State Telementors claimed to make a high degree of use of their Partner's support, while the other half were divided between moderate (30%) and low (20%) use of this support.

Most Helpful Aspects of Partner Support: The nature and degree of support provided across the 18 regional participants varied considerably. In those instances in which Partner support was seen as most effective, the following elements were seen as key:

- Partners took an **active role in planning** for the local training institutes.
- Staff from Partner agencies were **present and involved at most or all training sessions**.
- Partners **provided access to facilities and equipment** that could be used in the event of TMU technical difficulties.
- Partners **provided additional staff to assist with training** in order to improve the participant-to-trainer ratio.

Aspects of Partner Support that Could be Improved: In several cases, problems arose in connection with the Partner role. Areas in which difficulties or suggestions for improvement were made included:

- Some Partners perceived the **clerical and logistical responsibilities** associated with implementing the local institutes as burdensome.
- Partner **attendance at institutes that was sporadic or sparse** was not seen as helpful or supportive by State Telementors.
- Some State Telementors desired to have a more active **role in the Partner's selection of Local Telementors**.

Ratings of Support they Received from Telemation Project and CTP Staff: Almost all (90%) of the State Telementors rated the support received from CTP resources as available to a great extent and useful. Following are comments regarding specific strengths and areas for improvement of this support.

Most Helpful Aspects of Staff Support: Telemation Project and CTP staff were seen by the State Telementors as useful resources in the following ways:

- Members of the **Telemation and CTP leadership team** were seen as knowledgeable, accessible, and patient.
- **Technical support** in the face of TMU mechanical difficulties was seen as very helpful when it occurred.
- **Support from the Telemation Curriculum Specialist** for developing the curriculum projects was seen as useful.

Ways in which Staff Support Could be Improved: Comments made by the State Telementors regarding difficulties or suggested improvements included:

- Some participants had **trouble setting up their on-line accounts**, and desired more and faster assistance from CTP and Telemation staff.
- TMU technical difficulties resulted in some participants desiring **more technical on-site assistance** from CTP or Telemation staff during local training institutes.
- Some participants desired **more clearly articulated goals, objectives and timelines** for the project as a whole.

Ratings of On-Line Support: The vast majority (88%) of State Telementors reported that on-line support was available to a moderate or great extent, and that this support was useful to them. Forms of on-line support that were mentioned as particularly useful included:

- **E-mail communications between State Telementors**, CTP staff, and partners proved to be a powerful component of the Telemation project as it fostered an ongoing interaction regarding development and implementation of local training institutes, the sharing of information and instructional resources, and assistance with technical issues. E-mail communication also afforded the Telementors the opportunity to share and compare individual experiences and provide moral support to each other.

  A good example of the importance of online communications is the establishment of support groups of IBM users and Mac users by the State Telementors. These groups engaged in a great deal of online discussions and trouble shooting for getting the telecommunications software to work. While only a few participated in the discussions, many others reaped the benefits and received assistance from reading the groups' discussions.

- Online **assistance from the Project's Curriculum Developer** was also a significant contribution to State Telementors in the development and implementation of curriculum projects to serve as models for the integration of telecommunications in the classroom. Through the continuous use of e-mail, Telementors were coached in adhering their plans to state frameworks and trying to extend the use of telecommunications in student-problem solving activities.

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Local Telementors

Via the mail survey, Local Telementors were asked to rate and comment on the availability, degree of use, and quality of follow-up support provided via the Telemation Project.

Availability of Follow-Up Supports. Local Telementors rated on a 5-point scale the extent to which various forms of Telemation project support was available to them. They responded as follows:

Support Resource:	Extent Available on 1-5 scale: (1=None, 3=Moderate, 5=Great)
State Telementor(s)	3.8
Telemation Staff	3.7
Telemation Partners	3.5
On-Line Support	3.4

Use and Perceived Value of Support from Telemation Staff. Local Telementors rated the extent to which they made use of supports available from the Telemation staff. They responded as follows:

Resource:	Low Use	Moderate Use	High Use
Telemation Staff	19%	43%	38%
CTP Resources	30%	46%	24%

They then rated the degree of usefulness of those supports as follows:

Resource:	Never Useful	Sometimes Useful	Often Useful
Telemation Staff	5%	44%	52%
CTP Resources	12%	53%	36%

Most Helpful Aspects of Follow-Up Support: The following elements were mentioned repeatedly as being effective components of follow-up support:

- **Ongoing collaboration and on-line connections** among participants.
- Availability and accessibility of **Telemation staff** to answer questions and solve problems.

Local Telementors' Suggestions for Improving Follow-Up Support: Areas in which difficulties or suggestions for improvement were mentioned included:

- A desire for **more individualized follow-up with and monitoring** of Local Telementors once they returned to their work sites. One participant commented, "In some respects I felt trained and then orphaned."

- **More frequent and sustained contact with their group** was desired by many participants. Specific suggestions included:
  - monthly meetings with the State Telementor
  - periodic follow-up meetings
  - participant reunions
- Some desired **additional training** to be offered throughout the year.

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D. Impact on Teachers, Students, and the School

Question D1: To what extent has the Telemation Project had an impact on participating *teachers/school staff*?

State Telementors

State Telementor Activities: The 20 State Telementors were selected to provide training and follow-up support to the Local Telementors to enable them to effectively utilize telecommunications tools and on-line information resources to support teaching and learning. State Telementors played a pivotal role in the project. They were selected through a competitive application process. The application criteria required prior experience conducting staff development, knowledge of the State Curriculum Frameworks, some experience using telecommunications to support teaching, local access to the Internet, support from the site principal for conducting Telementor activities, and time to do the work of a Telementor. The overall duties for Telementors included: 1) collaborative development of the training curriculum for the Local Telementor Training, 2) development of a model Curriculum Project to be emulated by Local Telementors, 3) participation in the project evaluation activities, 4) preparation of training materials and strategies, 5) attendance at planning meetings, 6) communications and sharing with other Telementors, 7) training of Local Telementors, 8) follow-up technical assistance for Local Telementors, 9) on-line support for Local Telementors, 10) analyze network resources for educational value, 11) review and critique Local Telementor Curriculum Plans, and 12) provide various troubleshooting and problem solving activities as needed.

Perceived Impact on Teaching and Work Life: State Telementors were asked to rate on a 5-point scale (1= none, 3 = some, 5 = significant) the extent to which the Telemation Project increased or enhanced their own opportunities and experiences as teachers. Following are their mean ratings:

Staff Outcome	State T Rating (on 1-5 scale)
Serve as a resource to help others use telecommunications	4.7
Access and use of resources beyond textbooks	4.5
Interacting with colleagues	4.5
Gain confidence in own telecommunications use	4.4
Integrating telecommunications into curriculum & instruction	4.3
Overcoming isolation in own classroom	4.3
Making teaching more interesting	4.2
Increasing confidence as a staff developer	4.1
Evaluating the use & impact of telecommunications	3.9
Interacting with students	3.7
Providing student-centered learning opportunities	3.6
Providing student problem-solving activities	3.2
Providing simulation experiences	2.8
Grand Mean	**4.1**

Perceived Success in Using Telecommunications Instructionally. All 20 of the State Telementors reported that their use of telecommunications as a classroom resource had been successful, and that they would use it again.

Anecdotal Evidence of Staff Changes: State Telementors were asked to provide specific examples of changes that had occurred as a result of their participation in the Telemation project. The examples that were shared fall into several broad categories that are consistent with the most highly rated outcomes listed above. Following are the categories along with some representative quotes from the State Telementors' open-ended responses:

- **State Telementors enjoyed serving as a resource to others and felt they were having an impact.**

  "I feel very good about being a key person in my district in the development of curriculum and technology....Currently all Tech inservicing is at my site, which I develop."

  "I knew I wanted to become involved in the project but I did not think I could affect my district. But with the enthusiastic support from the leaders of the Project, the Partners and each State Telementor, I have gained confidence for sharing this enthusiasm with my district. The change has been awesome!"

- **Involvement in the project enhanced participants' credibility in the eyes of local colleagues.**

  "Having the title 'Telementor' gave me more credibility in the eyes of decision-makers when I spoke about the benefits of classroom telecomputing."

  "Telemation added validity to what I already did in the classroom with telecommunications. It helped justify and validate my use of computers."

- **State Telementors increased their knowledge and use of telecommunications.**

  "I learned a great deal about everything from hardware to software."

  "The Telemation project helped me gain resources, know-how, confidence, and a mandate for implementing telecomputing in my classroom."

  "I comfortably use all aspects of telecommunications and I knew/used nothing at all before the project."

- **Connections between professional colleagues were increased or enhanced.**

  "The use of email has connected me with colleagues in a more efficient manner than the phone."

  "I was able to work with staff at partner schools in North Carolina."

  "I'm now in touch with others all the time."

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Local Telementors

Perceived Impact on Teaching and Work Life: Local Telementors were also asked to rate on a 5-point scale (1= none, 3 = some, 5 = significant) the extent to which the Telemation Project increased or enhanced their own opportunities and experiences as teachers. Following are their mean ratings:

Staff Outcome	Local T Rating (on 1-5 scale)
Access and use of resources beyond textbooks	4.0
Confidence in own telecommunications use	4.0
Making teaching more interesting	4.0
Interacting with colleagues	3.7
Integrating telecommunications into curriculum & instruction	3.5
Providing student-centered learning opportunities	3.4
Evaluating the use & impact of telecommunications	3.4
Overcoming isolation in own classroom	3.4
Providing student problem-solving activities	3.2
Interacting with students	3.2
Providing simulation experiences	2.8
Grand Mean	**3.5**

Perceived Success in Using Telecommunications Instructionally. Nearly all (97%) of the responding Local Telementors reported that their use of telecommunications as a classroom resource had been successful and that they would use it again, as compared to only 3% who felt that their efforts to use telecommunications in the classroom had been unsuccessful.

Anecdotal Evidence of Impact on Local Telementors: In responding to the mail survey, Local Telementors were asked to elaborate on or provide examples of the outcomes they rated most highly. Following are the broad categories that were mentioned, along with some representative quotes:

- **Increased or enhanced communication with colleagues.**

  "More than anything, it ends isolation for teachers.

  "The greatest outcomes are in the area of communication with peers, access to global info and each other. I'm sold!"

  "I thoroughly enjoyed the peer contacts and the interaction."

- **Increased access to and use of telecommunications resources.**

  "I knew nothing before--this has opened a whole new world."

  "I can now search the world for information rather than just using local libraries."

  "I can access more up-to-the-minute information not available in textbooks."

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- **Overcoming fear of or discomfort with computers and technology.**

  "This project helped me overcome my fear of telecommunications."

  "Made me more comfortable with technology."

- **Increased integration of telecommunications into instruction.**

  "Telecommunications has become an element woven into my teaching."

  "The project effectively demonstrated how telecommunications could be incorporated effectively and meaningfully into the curriculum."

  "I'd never used telecommunications before. Now it's a regular part of my classroom."

In general, the use of mentoring on a large scale can be done with relative success as indicated by the teacher reactions. The extent of management and coordination to support this success is not sufficiently documented in the study, but needs comment. Working with the project, the evaluation team observed that additional coordination in future efforts would be desirable. Also, the ratio of one State to 24 Local Telementors was somewhat high. Future efforts should consider ways to provide more support from existing partners and agencies. This could be accomplished with additional pre-planning that involves County Office of Education staff and other partners. The results of this project effort provided a great deal of information to help in future planning for Telementoring projects.

Another area is the incentive structure for teachers to serve as mentors. While Telementors had a generally positive experience, concerns were expressed about the need for additional time. This implies that additional funding is needed to support teacher-time and resources for planning, implementing, and sharing their Curriculum Projects, as well as to learn more about telecommunications applications and to keep up with rapidly emerging technology-based educational resources.

Question D2: To what extent has the Telemation Project had an impact on *students* (e.g., on student learning, attendance, etc.)?

The assessment of the impact of Telemation interventions on student performance was determined by teacher judgments of student performance. In general, the approach was to have teachers rate the influence of the telecommunications resources on student variables. A review of the evaluation outcomes of the Curriculum Projects could reveal more direct changes in student performance resulting from the program. Because most of these projects are in the initial stages of development and implementation, it was not possible to gather reliable student assessment data. This would be a logical follow-up for future evaluation of the Telemation program.

Following are the Telementor-reactions regarding student impact:

State Telementors' Students

State Telementors' Assessment of Student Outcomes. The 20 State Telementors were asked to rate on a 5-point scale (1=not at all, 3=moderately, 5=significantly) the extent to which the instructional activities associated with the Telemation Project increased or improved their students' outcomes. The mean rating given for each item is presented below:

Student Outcome	State T Mean Rating
Interest in Telecommunications Use	4.7
Participation in Cooperative Learning	4.4
Proficiency in the Use of Telecommunications	4.3
Student Initiative or Autonomy	4.3
Frequency of Telecommunications Use	4.2
Problem-Solving & Higher Order Thinking Skills	4.0
Time Engaged in School Work	3.9
Completion of Classroom Assignments	3.8
Academic Performance	3.8
Classroom Behavior & Study Skills	3.7
Overall Interest in School	3.7
Attendance & Punctuality	3.1
Grand Mean	**4.0**

Perceived Impact on State Telementors' Students' Report Card Grades: When asked whether or not technology use had had a positive impact on their students' report card grades, State Telementors responded as follows:

Perceived Impact on Students' Report Card Grades?	Percentage of State Telementors Responding as Noted
Yes	61%
Not Sure	22%
No	17%

Of the 11 State Telementors who reported that technology use had indeed positively affected their students' report card grades, the average percentage of students' from their classes whose grades improved by at least one full grade point was just over one-third (36%).

Anecdotal Evidence of Impact on State Telementors' Students: State Telementors were asked to provide specific examples of ways in which the students they served had been affected by their own involvement in the Telemation Project. Many such examples were shared, and they tended to fall into several broad categories that largely mirror the most highly rated areas of impact listed above. Following are the categories followed by some illustrative quotes from the State Telementors:

- **Previously Low-Performing Students Improved their Academic Performance.**

  "XXX has struggled with writing assignments all year. He hadn't turned in any of his assignments. I was worried as we approached major research papers. However he was able to find information about his topic on the Internet not available in other places. He turned out an excellent project."

"One student was a low-achiever....He kept his grades up and worked to have free time to surf the Net. He bought a modem and began to use Netscape. It turned him around."

"XXX's attention to written Spanish increased. When he wrote to his online experts in Puerto Rico, he wanted always to make sure everything was correct. And as his final exam proved, his writing and vocabulary did, in fact improve. He had barely received a 'C' in Spanish II. In Spanish III his 'A' was solid."

- **Students who had previously lacked motivation became more interested in learning. In some instances, attendance notably improved.**

"XXX used to be a student bored with school. With an IQ of 155, he felt he had all the answers with not much to learn....XXX became extremely interested in the technical side of my project, wanting to create an electronic book by himself."

"My project was focused on earthquakes....XXX could care less. When he was responsible for downloading the daily earthquake reports, though, he got very interested in the subject. His enthusiasm led to an excellent personal project on earthquakes that demonstrated his understanding of plate tectonics."

"Telecommunications was an avenue for XXX to excel and heighten his learning potential....His attendance improved because he wanted to be there to receive his e-mail messages from his pen-pal."

- **Students who had been uninvolved with or ostracized by other students became a more interactive with and valued by their peers.**

"I have taught XXX for 3 years. In those 3 years, he has been very quiet [and his participation] has usually been prompted by a particular activity or by myself. During the project, XXX found his voice in my classroom. He thoroughly enjoyed writing to his adopted partner. But more than anything, computer creativity was new to XXX and he found an outlet and a reason to share with his classmates. [He began to] teach his classmates about how he achieved his imaginative graphics and cards in Hyperstudio."

Referring to the student mentioned above with the IQ of 155 who felt he had all the answers:

"He also had few friends, as he shared his view of his abilities with all. [After starting to work on his electronic book by himself], he soon discovered that other students who were working together in twos & threes were producing much more, quicker, and with high quality. As XXX is very competitive, he decided to have another student help him with the art on his book. He discovered that the collaborative book was a lot better. He now pulls students with specific skills together to produce [specific projects]. People are actually starting to like him!"

- **Students took on new roles in helping each other.**

"Telecommunication offered this student a new role in the classroom--he was seen as an authority and someone who knew something important and valuable. Other students sought his counsel and assistance when embarking on their projects. This role was a new niche for a student that was on the fringe prior to the introduction of telecommunication as a class activity."

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> *"XXX is a low-achieving student in my 6th grade class. YYY is a gifted student who was having problems using a search engine on Netscape to find information for her county report. XXX solved the problem by finding a home page displaying the continent....A mutual respect was achieved that day."*

- **Students gained confidence in their abilities and options for the future.**

> *"One of the students said that she had gained so much confidence in searching for information using telecommunications that her group [who had been involved in a simulation as international trade brokers] felt they might be able to run their own business as opposed to working for someone else."*

Local Telementors' Students

Local Telementors' Assessment of Student Outcomes. Local Telementors were also asked via the mail survey to rate on a 5-point Likert scale (1=not at all, 3=moderately, 5=significantly) the extent to which the instructional activities associated with the Telemation Project increased or improved their students' outcomes. Their mean ratings (followed by State Telementors' mean ratings for purposes of comparison) are presented below:

Student Outcome	Local T Rating	(State T Rating)
Interest in Telecommunications Use	4.3	(4.7)
Frequency of Telecommunications Use	3.8	(4.2)
Proficiency in the Use of Telecommunications	3.6	(4.3)
Participation in Cooperative Learning	3.6	(4.4)
Self-Esteem	3.5	missing item
Student Initiative or Autonomy	3.5	(4.3)
Problem-Solving & Higher Order Thinking Skills	3.4	(4.0)
Subject Area Knowledge & Skills	3.4	missing item
Overall Interest in School	3.4	(3.7)
Completion of Classroom Assignments	3.0	(3.8)
Time Engaged in School Work	3.0	(3.9)
Academic Performance	2.9	(3.8)
Classroom Behavior & Study Skills	2.8	(3.7)
Attendance & Punctuality	2.3	(3.1)
Grand Mean	**3.5**	**(4.0)**

As can be seen, participants reported the project as having a moderately high degree of impact on most areas (grand mean = 3.5 and 4.0 for Local and State Telementors, respectively), with the highest perceived impacts for both groups' students being in students' interest in and frequency of telecommunications use.

Perceived Impact on Local Telementors' Students' Report Card Grades. Local Telementors were also asked via the mail survey whether or not technology use had had a positive impact on their students' report card grades. Their response breakdown, (along with that of the State Telementors for comparison purposes), is shown below.

Perceived Impact on Students' Report Card Grades?	Percentage of Local Telementors Responding as Noted (State T Response)
Yes	20% (61%)
Not Sure	50% (22%)
No	30% (17%)

Of the 34 Local Telementors who reported that technology use had indeed positively affected their students' report card grades, the average percentage of students' from their classes whose grades improved by at least one full grade point was just under one-third (29%).

Anecdotal Evidence of Impact on Local Telementors' Students: Local Telementors were also asked via the mail survey to identify specific ways in which their students had been affected as a result of their own participation in the Telemation Project. Dozens of such examples were given. Following are the broad categories into which they tended to cluster (which are quite similar to those of the State Telementors), along with examples of each.

- **Previously low-achieving students increased their academic performance.**

  "A student with low productivity is now doing extensive research and is excited."

  " A student who previously got an `F' in writing now is getting `A's."

  "A student has really blossomed this year--even goes to other classrooms to help teachers with their new computers. He studies more now and his grades have improved."

  "Because of keypals, an ESL student has much improved writing skills."

- **Students who lacked motivation became more interested and involved in learning.**

  "One student was a terrible writer and not motivated -- now has written short stories and poems and is involved in sci-fi club."

  "A student from Bangladesh who originally had problems with attendance and completing assignments is now involved, spending a lot of time, and excited."

  "One student has gone from being hyperactive and disruptive to other students, then being bored and uninvolved in school, to now being excited, motivated and involved in telecommunicating."

  "A lazy, gifted student who was bored with classroom work has renewed interest and challenge."

  "A Special Ed student who has a difficult time getting involved in projects is now very interested in computers and is passionate about it."

  "A Miwok student who did not like writing with paper and pencil took an interest in writing due to email."

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- **Students who had been uninvolved with or ostracized by other students became a more interactive with and valued by their peers.**

  "GATE students tend to want to work alone -- one such student would not work with peers in any collaboration, but now works in a group."

  "A Pakistani student has `opened up' and communication in general has improved."

  "A shy and introverted student is now tutoring other students."

  "An outcast has become a helper for other students and is learning to relate to others."

  "A student reluctant to get involved in anything is now managing the keypals project."

- **Students took on new roles with their peers and with school staff.**

  "A previously suicidal student with academic/personal problems is now training and helping here and at other schools."

  "One student is now advertising his services as a consultant to teachers."

  "A student has become a mentor to other students and gotten a huge self-confidence boost."

- **Telecommunications served to `level the playing field' for students with differing abilities.**

  "A hearing disabled student now has an area where the disability is non-existent."

  "A wheelchair-bound student did research using telecommunications."

- **Students gained confidence in their abilities and options for the future.**

  "A special ed. student is now in demand as a partner for projects. This had greatly enhanced her self-esteem and given her future options of college instead of only marriage."

  "A student with `no future' now wants to explore possible careers using computers."

  "XXX now `knows' what he wants to do in life -- this has sparked his interest in the future."

Question D3: To what extent has the Telemation Project had an impact on the larger *school community* and/or the *community at large*?

State and Local Telementors were asked via the mail surveys and institute reflections to rate and/or comment on any impact(s) they had seen occurring within their school or larger community as a result of the Telemation project. Members of the management team were interviewed regarding these issues as well. Several areas of impact were noted; these are summarized with supporting evidence below.

- **Expanded Use of Telecommunications among Teachers and Students within the School and/or District**. As noted also under Question C3 with respect to staff outcomes,

State Telementors were very pleased with their expanded ability to serve as a resource to help others use telecommunications. They also indicated via the survey that many more teachers in their settings were now using telecommunications as a result of their involvement in the project. Their mean responses to these survey items were:

Outcome:	Mean Rating of Extent to which the Telemation Project increased it on 5-point scale (1=none, 5=significantly)
State Telementor able to serve as a resource to help others use telecommunications	4.7
Expanded the use of telecommunications to other teachers at your school	4.2
Expanded the use of telecommunications to other teachers in your district.	4.2

- **Positive Impact on Larger School Community.** The comments below also indicate that, as a result of the project, the State Telementors were being called upon regularly as telecommunications resource persons within their local settings, and that they could see that they were having an impact on the larger school community:

  "In addition to being a Telementor to others, I have been a resource for district facilities planning."

  "I'm responding to 100 e-mails a week for assistance [from the Local Telementors], and I've also brought three new teachers on line."

  "My enthusiasm has 'hooked' some teachers."

  "Use of the library jumped. Before- and after-school use went up 100%. Ten computers in the library are now in constant use from 6:30 to 5:00."

- **Positive Impact on Students' Parents**. Though not an outcome directly targeted by the Telemation project, several State and Local Telementors commented that the project had resulted in students teaching their parents how to use telecommunications, and in improved home-school relations.

  "Some students are using telecommunications at home now, and are even teaching their parents how to use it."

  "Parents' outlook at our school is improved because the Internet that they had read about in the mass media & that they possibly use is being implemented in the classroom. Students and parents are realizing the true power of the Internet: collaboration and cooperation."

- **Expanded use of Telecommunications by Administrators**. Although relatively few administrators participated directly in the Telemation project as compared with the number of teachers, several Telementors noted an impact on this group as well:

  "Many administrators are now starting to use telecommunications due to the training. It really jump-started our county."

"I was an Administrator-Telementor. First, I learned a great deal and use it daily in my work as a principal. For example, I recently learned that a student at my school has Prader Willi Syndrome. I have used telecommunications to learn what this is, how it can affect school performance, and to contact further resources. Second, I have seen administrators in my workshops become eager to pursue telecommunications. They have gone out and secured the resources they needed to get on-line themselves."

- **Expanded or Enhanced Telecommunications Training Opportunities**. Over and above the training directly provided as part of the Telemation project itself, there were several instances in which the project led indirectly to expanded training and staff development opportunities:

  "The Telemation project is being used as a model for our district's staff development."

  "When the TMU [came] back in January, along with Telemation follow-up, it [was] used to train regional support people such as the Subject Matter Project Directors, as well as the 1274 Restructuring Schools."

E. Overall Reactions to the Telemation Program

Question E1: To what extent do key players and participants view the overall Telemation model as effective?

State and Local Telementors were asked via the mail survey to comment on what they found to be both the most and the least beneficial aspects of the Telemation project as a whole. In addition, since one of the hallmarks of this project was the development and use of the TeleLearning Mobile Unit (TMU) as the vehicle for providing statewide training, participants were asked to rate and comment on this aspect of the project specifically.

Perceived Strengths of the Telemation Project as a Whole. State and Local Telementors were asked to comment on what they saw as the most and least valuable aspects of the Telemation project as a whole. Benefits that were noted included:

- **The project's emphasis on the use of technology in support of the curriculum as practiced via the development of curriculum projects**. Telementors enjoyed and appreciated the opportunity to put telecommunications to work instructionally via the curriculum projects, and they found the exercise of doing so extremely valuable. The curriculum projects provided a specific vehicle for teachers to apply the technology to address particular curricular and instructional purposes. In addition to the staff development, these projects helped promote the use of telecommunication tools and resources to support and enhance implementation of the California Curriculum Frameworks while addressing local student and curricular needs. These projects also made it possible for teachers to share how they applied telecommunications in their classrooms. This project-based teaching approach proved to be one of the features essential to the success of the Telemation.

- **Networking opportunities that occurred between teaching colleagues.** A very large number of participants commented on how valuable it was to them to have the opportunity to problem-solve and share ideas both in-person and on-line with their professional peers. The premise of "teachers teaching teachers" was seen as highly effective. Networking offered opportunities for teachers to share and comment on each others curriculum projects. This networked sharing provides expanded opportunity for staff development and ongoing technical assistance.

- **Increased opportunities and visions for the future**. Many individuals commented on the expanded opportunities that increased knowledge of telecommunications provided for them, both in terms of their own teaching practices and career opportunities, but also and especially in terms of what they saw as possible for their students.

Perceived Drawbacks of the Telemation Project as a Whole, and Participants Suggestions for Improvement. In addition to the difficulties and suggestions mentioned specifically in connection with the TMU, the following drawbacks and suggestions were mentioned:

- **Training sessions tended to contain too much lecture, and too much emphasis on curriculum and reform documents as opposed to specific telecommunications how-to's**. While Telementors appreciated the emphasis on curriculum and agreed with the view of technology as a tool to support teaching and learning, many felt that too much actual training time was devoted to curriculum development and assessment issues. Their objection stemmed from the fact that these

Telementors were selected largely because of their instructional competence, so most if not all of them were already familiar with and using much of the instruction-related training material that was presented. They felt they needed less training time devoted to these familiar issues and more devoted to telecommunications specifics.

- **There was a strongly felt need for additional, formalized follow-up support beyond the training institutes themselves.** Though informal on-line support was available and used by many of the Telementors, a large number expressed a desire for additional training opportunities and follow-up support. Some participants suggested that project leadership continue to send supplementary training materials and resource information to participants via e-mail. This is one of the most important issues to consider in the planning for future Telementor programs. Sufficient funding was lacking to provide the level of follow-up needed. This implies that schools should integrate into their local School Improvement and School Development and other programs the resources needed to support ongoing teacher-use of telecommunications.

- **The support of administrators was seen as crucial and too often lacking; many desired more training for administrators**. Administrators for the most part control the budgets from which telecommunications resources are funded. Therefore, many Telementors voiced the view that unless and until administrators are informed of and invested in the benefits that can come from the instructional use of telecommunications, their own efforts as Telementors can be limited at best.

Reactions to the TeleLearning Mobile Unit (TMU) in Particular: State Telementors were asked on the mail survey whether, based on their assessment of the TMU's strengths and weaknesses, they would recommend terminating, continuing or expanding its use in the future. Below are their responses:

Recommendation regarding Future Use of TMU	% of State Telementors Responding as Noted
Terminate use of the TMU	17%
Continue use of the TMU	50%
Expand use of the TMU	33%

In addition to providing their recommendations regarding appropriate future use of the TMU, State Telementors were asked to comment on what they saw as both the benefits and problems associated with the use of the TMU as a training facility. Local Telementors volunteered open-ended comments regarding the TMU as well.

Benefits of the TMU as a Training Facility: State and Local Telementors' comments regarding the benefits of the TMU centered around several themes:

- **The TMU equalizes on-line access opportunities across locations**. Since the TMU operates as a self-contained unit with Internet access, it is not dependent on local resources to ensure Internet connections and thus equalizes opportunities for people in various locations that would not ordinarily have access to a lab. However, it was mentioned that as more and more sites gain access to lab set-ups, the need for a mobile training site will greatly diminish.

- **The TMU is compact and mobile**. Participants liked the fact that 24 trainees could be on-line at once and that the TMU could be transported anywhere conveniently.

- **The TMU training setting offered participants a vision of a networked classroom**. The Telemation training that occurred in the TMU consisted largely of on-line exploration, and served to model for participants many of the elements of a classroom situation in which all students are connected on-line.

Drawbacks of the TMU as a Training Facility and Telementors' Suggestions. State and Local Telementors' comments regarding the downsides or drawbacks associated with the TMU indicated that:

- **Technical difficulties that impair the TMU's reliability overshadow any benefits**. Many participants commented that they liked the concept of the TMU and thought it worked fairly well as a training facility as long as it was not malfunctioning in some way. The extent of the technical difficulties experienced was a source of frustration to a great many participants and project leaders, and would need to be directly addressed in the future.

- **Given the high likelihood of technical problems, a technical person who would travel with the truck was seen as necessary**. A great many Telementors voiced the view that if it is not possible to ensure consistent, reliable performance of the TMU, then the next best thing would be for a technically knowledgeable person to accompany the truck at all times.

- **The use of two training platforms was problematic.** The TMU was equipped with 24 workstations (12 Macs and 12 PCs). Several problems arose in connection with this arrangement: there were hardware and software problems for PC users in many cases, trainers were ill-equipped to address the two with equal comfort, and trainees were often forced to learn on a platform other than their platform of choice simply because of space limitations. Suggestions consisted of:

    - equipping the TMU with workstations of a single platform instead of two

    - having two trainers per TMU (each more skilled in one platform) if two platforms are used

- **Interior space was too cramped and, in some cases, too hot**. What was viewed as "compact" to some was clearly seen as over-crowded by others. Moreover, there were instances in which the air conditioning system broke down and participants were becoming overheated as well as overcrowded.

- **Problems with connectivity and slow speed**. Many Telementors mentioned the difficulties they experienced in logging on. Even when logged on, the on-line operating speed was seen by many as much too slow.

Use of the TeleLearning Mobile Unit is a unique new method for facilitating the training of teachers in the use of telecommunications in the classroom. This new experience with the TMU encountered many technical problems that were further complicated by a training site's inability to provide back-up Internet connections (this is especially problematic in rural areas of the state). It is expected that in time these problems can be resolved. Therefore, it is important to gather more information and cost analyses to address these issues.

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Question E2: To what extent do project participants view the results obtained via the overall Telemation Project as worth the cost and effort involved?

State and Local Telementors responses

Assessment of Overall Benefits in Light of Costs. Via the mail survey, State and Local Telementors were asked to assess the Telemation Project's overall benefits to teaching and learning in light of the costs involved (e.g., financial costs and level of effort required for participation). The majority of respondents felt that the benefits clearly outweighed the costs, and that the effort was well worth it. The specific response breakdown for both State and Local Telementors was as follows:

Response Category	State Telementors	Local Telementors
Important student benefits were attained and the effort was clearly worth it	78%	59%
Moderate student benefits were attained that probably couldn't have been attained without the project	11%	30%
Some student benefits were attained, but these could have been accomplished more cost-effectively	11%	7%
Benefits clearly were not worth the effort	0%	4%

The higher percentage of State Telementors indicating that "important student benefits were attained..." was probably due the fact that the State Telementors had all implemented curriculum projects and had more time in the project to practice with telecommunications than did the Local Telementors.

Open-Ended Comments Generally Reflected State and Local Telementors' Belief that Project Benefits Outweighed Costs. Most respondents indicated that despite some of the difficulties that occurred along the way, they felt that the benefits of the project outweighed the costs. Following are some representative written survey comments from both State and Local Telementors.

> *"The Telemation Project has been one of the highlights of my teaching career. It had many problems and rough edges (the shut-down of CORE, problems with the TMU, etc.). Despite it all, I've come away with a vision for schools of tomorrow and classrooms without walls. I know where we need to get to and what types of activities will work to support the core curriculum. All of this would probably not have happened had it not been for the Telemation Project --t he people including Telementors, partners, administrators. I feel sad that the project is standing still and perhaps will end in December -- why don't policy makers understand that these types of programs need to be sustained for systemic change to really occur? Telemation initiated a vision that needs support."*

> *"The project needs to be funded, expanded, replicated, and continued. Despite some of the growing pains, there was no doubt that this project was successful and will remain successful because the staff development concept is sound....Telemation fills the technology staff development void left by the CSU schools and left by district staff development programs....They do not have the money nor the mandate to teach telecomputing technology to educators. This is why Telemation is valuable, worthwhile, and effective.".*

"The TMU had technical problems but [the project] was useful overall."

"I was not initially prepared to change my lifestyle. Telecommunications does change your lifestyle. My own teaching experience has been recharged. Telecommunications is an exciting investment in the future. Being a pioneer is hard work, but an adventure worth taking."

Regional Partners

Open-Ended Comments Reflected View that Project was Worthwhile. In the comments expressed in their Institute Reflections, Telemation's Regional Partners also tended to voice the belief that, on the whole, the project's benefits had outweighed its costs and that continued support is both necessary and worthwhile.

"Projects of this scope should have the benefit of multi-year funding....The work started should be continued! The one-year 'wonder projects' without sustained support and follow-up work go against all we know about learning and change."

"The project has been and will be an important part of developing the direction of learning in today's and tomorrow's education. I have enjoyed participating in the project and am looking forward to helping in the further development....In addition, 'partnerships' are a mandated privilege for us all in the restructuring process. I am so pleased to be involved with a working partnership to give understanding of the structure, some experience in process, and a 'learning place' where the experience of other partners will add to my knowledge and understanding of this pivotal element in this and in other aspects of my work. I'm very ready for next steps.

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III. IMPLICATIONS FOR FUTURE PLANNING

Telemation offers a model approach for building the local capacity of teachers to effectively utilize telecommunications and integrate information resources and telecommunications opportunities into teaching and learning. This model provides a cost-effective approach for the utilization of existing personnel in schools and county offices of education in collaboration with business partnerships to facilitate educational applications of telecommunications and related technologies. This evaluation clearly identified areas where the program could be improved. The recommendations should be considered as guidelines when adapting the approaches offered by the Telemation model. Beyond these recommendations, this report highlights the critical and beneficial features that should be considered for scaling up, dissemination, and adaptation to other educational settings. Following is a brief discussion of each of these features followed by a recommendation to consider in developing a system to provide needed staff development and technical assistance for the educational application of telecommunications.

A. Multi-tiered mentoring. The Telemation Project capitalizes on the benefits of using practicing teachers to provide the training and technical assistance to support classroom integration of telecommunications. The selection of regional or State Telementors who are organized to train Local Telementors who in turn train local teachers is an effective model with much potential. The use of carefully developed criteria for selection of Telementors and the application process for the Local Telementors, combined with a scope of work or job description for Telementors is another critical feature. However, it is clear that a greater investment to fund the time needed to provide adequate follow-up, as well as the time to continuously monitor and screen the large volume of educational resources emerging on the Internet is critical. Also, the management, support, and team-building of the mentors to instill the needed 'esprit de corps' is a critical factor to keep the system alive. Though much of the communications and sharing can happen 'on-line', it is clear that the mentors must have periodic face-to-face communications with support and social reinforcement offered by the project management.

Recommendation:

> *Establish a process for the selection, training, and ongoing support of teachers serving as mentors at the regional, school, and classroom level to train for and support the local integration of telecommunications into teaching and learning.*

B. Regional organizational structure. It is clear that regional agencies such as county offices of education, the California Technology Assistance Project (CTAP), and other regional agencies must play a critical role in helping to select, train, and develop the curriculum-based training for the Telementors. The regional structures are critical to provide ongoing management and monitoring as well as technical support to help ensure that teachers can be connected to the network. For example, existing computer coordinators and technical staff at the regional and district levels should be available to provide follow-through technical support to ensure ongoing teacher access to the network. The CDE plays an important role in setting the curricular direction and ensuring that the program is coordinated with other state educational telecommunications and technology initiatives. This coherent structure, which involves stakeholders at all levels from the classroom teacher to the State Office of Educational Technology, is essential to the success of the program.

Recommendation:

> *Utilize the resources of the existing organizational structures in the state, including the Department of Education, the County Offices of Education, and other existing agencies, to actively support the coordinated design and implementation of the staff development program.*

C. Business and Organization partnerships. Telemation was initiated with the concept of leveraging resources from as many partners as possible. Partners consisted of the stakeholders and agencies that offered support for project implementation. The partners provided in-kind resource support as well as advocacy for the program. Future partnerships in Telementor programs should involve businesses, libraries, and professional education organizations that can contribute additional and unique resources. The rapid infusion of telecommunications and use of Internet resources within these agencies would seem to suggest that such agencies will be increasingly willing and able to partner with future Telementor programs.

Recommendation:

> *Actively involve a wide variety of business and organizational partners to plan, support, expand and advocate for the Telementor program.*

D. Project-based teaching approach. The use of the "Curriculum Projects" developed by each of the participating State and Local Telementors was a critical program factor. Research on the Monterey Model Technology Schools (Cradler, 1992), Cupertino Model Technology Schools (Barnett, 1992) and more recently with the Department of Defense Dependent Schools, (Cradler, 1995), clearly indicates that effective educational uses of technology requires teachers to be directly involved in constructing projects to which they can apply technology to address specific needs. The Curriculum Project provides a vehicle for documenting how each of the Telementors apply technology within the class room, and thus provides a basis for evaluating the classroom impact of technology, and for communicating and sharing telecommunications applications on-line. Additionally, these plans help to define 'exemplary' applications of telecommunication for potential expansion and adaptation.

Recommendation:

> *Ensure that teachers (or teacher teams) develop a specific and instructionally meaningful use for the telecommunication tools, resources, and related technologies through their own development of a "Curriculum Project."*

E. Linking telecommunications use to curriculum. Often telecommunications is employed without attention to the specific integration of the technology to support both current and emerging curriculum reforms and initiatives. In these cases, research shows that technology use is either not sustained, or fails to produce a valuable contribution to teaching and learning (Far West Laboratory, 1992, 1995). For these reasons, the CDE required that Telemation be guided by curriculum priorities outlined in the California State Curriculum Frameworks, and be balanced by the local curriculum and instructional needs of the school site. Curriculum integration was accomplished by: 1) emphasizing curriculum and instruction in the training of all Telementors, 2) providing links to curriculum-relevant resources on the Internet, 3) providing a curriculum

consultant to assist with all aspects of project development and implementation, and 4) use of the Curriculum Project as a vehicle to support classroom planning for the integration of telecommunications.

Recommendation:

> *Tie the planning and implementation of telecommunications tools and resources to state and local curriculum priorities and to students' specific instructional needs.*

F. Linking lessons learned to future planning. The evaluation of Telemation concluded that the program and approach was well worth the funding expended for the program. Many lessons have been learned with regard to developing and implementing a large scale effort to provide staff development and support for effective telecommunications use. The suggestions that emerged from this study should be useful in informing and guiding future efforts to implement and/ or scale up this or other similar programs. The evaluation approaches used in this project can also be adapted and improved for use in future efforts. Doing so will create opportunities to add to a growing pool of information that can be shared with other states and agencies as they strive to enhance teacher capacity to effectively use telecommunications tools to support teaching and learning.

Recommendation:

> *Draw upon lessons learned from the Telemation Project to inform planning and implementation of future endeavors.*

APPENDICES

A. Assessment and Evaluation Instruments

B. State Telementor Curriculum Plans

C. Telementor Application and Recruitment Materials

D. List of Partners and Telementors

A. Assessment and Evaluation Instruments

1. Telementor Project Evaluation Survey
2. Training Institute Participant Project Evaluation Survey
3. Administrative Participant Project Evaluation Survey
4. Training Institute Evaluation Form
5. Classroom Telecommunication Intervention Plan (C-TIP) Form

Far West Laboratory

TELEMATION PROJECT EVALUATION SURVEY 1/25/95

TELEMENTORS*

Workshop code: WC

School code: SC

(For office use only)

I. Background

1. Professional status (√): ....Full time teacher _____.....Part time teacher _____.....Administrator _____
   County Office Staff _____ .....Library/Media Specialist _____
   Other (specify) _____

2. Grade(s) currently teaching (circle all that apply): K 1 2 3 4 5 6 7 8 9 10 11 12

   a. What percentage of students in your classroom do you estimate have computers with telecommunications technology at home? (√)

   0___ 1-10%___ 11-25% ___ 26-50%___ 51-75%___ 76+%___

   b. Estimate the percentage of students with special needs in your classroom (write in percentage):

   Bilingual___% Chapter 1___% Special Ed___% Gifted___% Other___%

3. Estimate (√) time allocated during the week for you to learn and use telecommunications.

At School		At Home	
None	____	None	____
1 hour per week	____	1 hour per week	____
3-6 hours per week	____	3-6 hours per week	____
6+ hours per week	____	6+ hours per week	____

4. Indicate (√) your use of telecommunications prior to participation in the Telemation Project.

	Never	Occasional	Often	Very often
a. At home/out of school	____	____	____	____
b. At school/part of instruction	____	____	____	____
c. For record keeping/administrative use	____	____	____	____

5. Indicate (√) your level of confidence in using telecommunications as an instructional resource prior to your participation in the Telemation Project.

None.....
Low.....
Personal use.....
Integrate into classroom.....
Teach others.....

II. Planning and Support

1. Indicate (√) the number of accessible telecommunications resources in your classroom.

	0	1-5	6-10	11+
Computer(s)	_____	_____	_____	_____
Modem(s)	_____	_____	_____	_____
Phone line(s)	_____	_____	_____	_____
Networks (LAN/WAN)	_____	_____	_____	_____

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2. Does your principal and/or assistant principal use telecommunications? (√)
   Never _____
   Sometimes _____
   Often _____

3. Did your principal and/or assistant principal attend a Telemation Training Institute? ..... yes_____ ..... no_____ ..... not sure_____

4. Since the Telemation Institute, what has been the level of support by your principal and/or assistant principal for using telecommunications in the classroom? (√)
   None _____
   Little _____
   Moderate _____
   High _____

5. Do you have access to a local, ongoing school or district technical support person? (√) yes _____ no_____
   If yes, is the support ..... adequate_____ ..... inadequate_____

6. Does your district have an Educational Technology Plan which is currently being implemented? (√) ..... yes_____ no____ not sure_____
   If yes:
   a. Does that plan include a telecommunications component? ..... yes_____ no____ not sure_____
   b. Is the telecommunications component being implemented in your district? ..... yes_____ no____ not sure_____
   c. Were you or other teachers involved in developing the plan? ..... yes_____ no____ not sure_____

7. Does your school provide funding earmarked for telecommunications? ..... yes____ ...no____ not sure_____
   If yes, indicate the extent to which the following funding sources are available for telecommunications: (circle)

	None	Adequately			Significantly
a. General Fund	1	2	3	4	5
b. SB 1510 Grants	1	2	3	4	5
c. School Improvement Program (SIP)	1	2	3	4	5
d. Chapter 1	1	2	3	4	5
e. Business	1	2	3	4	5
f. Other _____	1	2	3	4	5

9. Are you a member of a computer-using educator's organization? (√) ..... yes _____ ..... no_____
   If yes, what organizational resources are helpful? ..... newsletter_____ ..... annual conference____
   regional conference_____ ..... member networking____ ..... other____

10. Indicate (√) the extent to which each of the following (a-k) is accessible, used and is useful:

	Accessibility			Use			Usefulness		
	never	sometime	often	low	moderate	high	never	sometime	oft
a. District administrative support for curriculum project activities	____	____	____	____	____	____	____	____	__
b. School administrator support for curriculum project activities	____	____	____	____	____	____	____	____	__
c. Telemation partners	____	____	____	____	____	____	____	____	__
d. California Technology Project (CTP) Resources	____	____	____	____	____	____	____	____	__
e. CORE/CSU-Net									
f. Other online resources	____	____	____	____	____	____	____	____	__
g. District-provided staff development	____	____	____	____	____	____	____	____	__
h. Time allocated for planning and implementing curriculum project activities	____	____	____	____	____	____	____	____	__

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	Accessibility			Use			Usefulness		
	never	sometime	often	low	moderate	high	never	sometime	often
i. On-line moderator	____	____	____	____	____	____	____	____	____
j. Technical support	____	____	____	____	____	____	____	____	____
k. Curriculum integration help	____	____	____	____	____	____	____	____	____
l. Appropriate content available online	____	____	____	____	____	____	____	____	____

If you (√) never under accessibility, explain: _____

_____

_____

III. Use of Telecommunications

1. How many hours per week do your students spend using telecommunications during the school day?
   Hours per week (circle): ..... 0 1 2 3 4 5 6+

2. Has telecommunications become a regular part of instruction or a resource for you? (√)
   ..... yes_____ ....no _____

   If yes, cite an example: _____

   _____

3. What is your primary telecommunications service provider? (√)

   a. CSUNet/CORE ..... _____
   b. America Online (AOL) ..... _____
   c. PBS - KQED Learning Link ..... _____
   d. Prodigy / Classroom Prodigy ..... _____
   e. eWorld ..... _____
   f. CompuServe ..... _____
   g. Other_____ ..... _____

4. What are the information sources you find most useful to support teaching and learning?
   (circle each source and rate level of support)

	None		Moderate		Significant	Not Sure
a. CORE	1	2	3	4	5	?
b. NEA Online	1	2	3	4	5	?
c. GINA	1	2	3	4	5	?
d. Special Net	1	2	3	4	5	?
e. Goldmine (CDE)	1	2	3	4	5	?
f. INet	1	2	3	4	5	?
g. PBS Learning Link	1	2	3	4	5	?
h. ERIC	1	2	3	4	5	?
i. CalTIP	1	2	3	4	5	?
j. Kidlink	1	2	3	4	5	?
k. Other _____	1	2	3	4	5	?

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5. What do you use telecommunications for? First (√) if accessible at your site, then circle level of use (one or more)

		Accessible	Usage is: Not at all	Monthly	Weekly	Daily
a.	e-mail	_____	1	2	3	4
b.	database searches	_____	1	2	3	4
c.	conference forums	_____	1	2	3	4
d.	other _____	_____	1	2	3	4

specify _____

IV. Telemation Curriculum Project

1. Please check (√) which of the following that best describes the status of your Telemation Curriculum Project (TCP):
   a. I am planning a curriculum project but have not had an opportunity to start _____
   b. I am currently implementing my curriculum project _____
   c. I plan to continue my curriculum project into next year _____
   d. I completed my project _____

2. Circle the grade(s) in which your Telemation Curriculum Project (TCP) is being/will be used:

   K 1 2 3 4 5 6 7 8 9 10 11 12

3. Circle the month/year you started implementing your TCP:

   1994 1995 Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec

4. Indicate (√) the content area (s) addressed in your TCP:
   Mathematics _____
   Science _____
   Language Arts _____
   History/Social Science _____
   Visual/Performing Arts _____
   Other _____

5. Do you have the equipment needed to implement your TCP? ..... yes_____ no _____

6. Describe the most unique features of your project?_____

   _____

7. Do you plan to continue or expand the project? ..... yes_____ no _____
   What are the main features, elements, or activities you think should be continued?

8. Would you be interested in assisting others adopting and/or adapting your project? ..... yes_____ no _____

V. Reactions to Telemation as a Resource

		None		Moderate		Significant
1.	To what extent did the Telemator training prepare you to teach others telecommunications into instruction?* (circle)	1	2	3	4	5
2.	To what extent was online support available for you to communicate with other telementors?* (circle)	1	2	3	4	5

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3. To what extent were you able to provide followup support to the people you trained?* (circle) None 1 2 3 4 Significant 5

4. To what extent was telecommunications available or useful in assisting the people you trained?* (circle) 1 2 3 4 5

5. To what extent was follow-up support available from?

Support from...	None		Moderate		Great extent
Telemation Staff	1	2	3	4	5
School Administrators	1	2	3	4	5
Telemation Partners	1	2	3	4	5
On-line support	1	2	3	4	5
Other _____	1	2	3	4	5

6. How often are you communicating with others in the project (circle)?*

Never		Some		Frequently	Very Frequently
a.	With your other Telementor	1	2	3	4 5
b.	With people you trained (TIS)				
c.	With your local colleagues	1	2	3	4 5
d.	With project leadership	1	2	3	4 5
e.	Other _____	1	2	3	4 5

7. Indicate the benefits of the Telecommunications Mobile Unit (TMU) as a training facility*_____

_____

_____

_____

8. Indicate the long-term (non-solvable) problems with the TMU*_____

_____

_____

_____

_____

9. Would you recommend: a) termination_____, b) continuation_____, or, c) expansion_____ of the TMU?*

10. General comments about the TMU:*_____

_____

_____

_____

VI. Change (as a result of your participation in Telemation)

For each of the following categories, rate the observed change among students participating in the instructional activities of this project and with yourself in relation to your students (circle one for each item below; circle N/A if item does not relate to your project):

A. Student Outcomes

1. To what extent has the project INCREASED OR IMPROVED students'.....

	Not at all		Moderately		Significantly	N/A
a. Attendance/punctuality	1	2	3	4	5	N/A
b. Interest in telecommunications use	1	2	3	4	5	N/A
c. Frequency of telecommunications use	1	2	3	4	5	N/A
d. Proficiency in the use of telecommunications	1	2	3	4	5	N/A
e. Classroom behavior and study skills	1	2	3	4	5	N/A
f. Problem-solving and higher order thinking skills	1	2	3	4	5	N/A
g. Overall interest in school	1	2	3	4	5	N/A
h. Academic performance	1	2	3	4	5	N/A
i. Student initiative	1	2	3	4	5	N/A
j. Participation in cooperative learning	1	2	3	4	5	N/A

	Not at all	Moderately	Significantly	N/A
k. Completion of classroom assignments	1 2 3 4 5			N/A
l. Time engaged in school work	1 2 3 4 5			N/A
m. Other _____	1 2 3 4 5			N/A

2. For each area where "4" or "5" was circled in Question 1, elaborate on the student change and how the project contributed to the change.

Item letter from Question 1	Describe the student change and how the project contributed to the change

3. Think of a particular student in your class that has improved his/her grade or performance as a result of telecommunications use. Describe briefly the "story" about this student: what made the difference, what does the student do now that wasn't done before, etc.:

B. Staff Outcomes

1. To what extent has the Telemation Curriculum Project INCREASED your opportunities to:

	None			Moderately	Significantly	
a. Access and use resources beyond textbooks and other curriculum materials	1	2	3	4	5	N/A
b. Provide student problem-solving activities	1	2	3	4	5	N/A
c. Provide student-centered learning opportunities	1	2	3	4	5	N/A
d. Make teaching more interesting	1	2	3	4	5	N/A
e. Interact with colleagues	1	2	3	4	5	N/A
f. Interact with students	1	2	3	4	5	N/A
g. Provide simulation experiences	1	2	3	4	5	N/A
h. Gain confidence in your own telecommunications use	1	2	3	4	5	N/A
i. Integrate telecommunications into the curriculum	1	2	3	4	5	N/A
j. Evaluate the use and impact of educational telecommunications	1	2	3	4	5	N/A
k. Integrate telecommunications into curriculum and instruction	1	2	3	4	5	N/A
l. Serve as a resource to help others use telecom*	1	2	3	4	5	N/A
m. Expand the use of telecom to other teachers at your school*	1	2	3	4	5	N/A
n. Expand the use of telecom to other teachers in your district*	1	2	3	4	5	N/A
o. Increase your self-confidence as a staff developer	1	2	3	4	5	N/A
p. Overcome isolation in your own classroom	1	2	3	4	5	N/A
q. Other _____	1	2	3	4	5	N/A

2. For each area where 4 or 5 was circled in Question 1, elaborate on the change and how the project contributed to the change.

Item letter from Question 1	Describe the change(s) and how the project contributed to them.

3. Think about your whole class (focus on one if secondary). Do you think that report card grades have improved as a result of technology use: (circle) ..... Yes____ No____ Not sure____

4. If you answered yes above, estimate the percentage of students in your class that improved their grades (by at least one or more full grade points) as a result of technology use (write in percentage) ..... ____%

5. Considering the overall funding and your efforts on behalf of this project, indicate the statement below that best represents your assessment of the project's overall benefits for teaching students (circle one):

- Benefits were clearly not worth the effort 1
- Some benefits for students were attained but could have been accomplished in other more cost-effective ways 2
- Moderate benefits for students were attained that probably could not have been attained without the project 3
- Important benefits for students were attained and the effort was clearly worth it 4

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6. Indicate the most important resources you need to insure continuing educational telecommunications usage in your classroom and the level of need (circle)

	Not needed		Needed		Urgent need
a. Technical support	1	2	3	4	5
b. Administrative support	1	2	3	4	5
c. Increased funding	1	2	3	4	5
d. More time	1	2	3	4	5
e. Curriculum integration assistance	1	2	3	4	5
f. Other _____	1	2	3	4	5

7. List the most positive features or benefits of Telemation for you. _____

_____

_____

8. List the elements of Telemation that were of least or no benefit to you. _____

_____

_____

9. In summary, do you feel your use, to date, of telecommunications as a classroom resource has been:

Unsuccessful (a waste of time) _____
Successful (but won't use again) _____
Successful (and will use again) _____

VIII. Final Comments

We are looking for overall recommendations and input from you the participants in the Telemation Project about the program and its resources. Please be specific.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

* Items with an asterisk are only included in the Telementor version of this survey.

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TELEMATION PROJECT EVALUATION SURVEY 1/25/95

TRAINING INSTITUTE PARTICIPANTS

Workshop code: WC

School code: SC

(For office use only)

I. Background

1. Professional status (√): ... Full time teacher ____ ... Part time teacher ____ ... Administrator ____
   County Office Staff ____ ... Library/Media Specialist ____
   Other (specify) _____

2. Grade(s) currently teaching (circle all that apply): K 1 2 3 4 5 6 7 8 9 10 11 12

   a. What percentage of students in your classroom do you estimate have computers with telecommunications technology at home? (√)

   0___ 1-10%___ 11-25% ___ 26-50%___ 51-75%___ 76+%___

   b. Estimate the percentage of students with special needs in your classroom (write in percentage):

   Bilingual___% Chapter 1___% Special Ed___% Gifted___% Other___%

3. Estimate (√) time allocated during the week for you to learn and use telecommunications.

At School		At Home	
None	____	None	____
1 hour per week	____	1 hour per week	____
3-6 hours per week	____	3-6 hours per week	____
6+ hours per week	____	6+ hours per week	____

4. Indicate (√) your use of telecommunications prior to participation in the Telemation Project.

	Never	Occasional	Often	Very often
a. At home/out of school	____	____	____	____
b. At school/part of instruction	____	____	____	____
c. For record keeping/administrative use	____	____	____	____

5. Indicate (√) your level of confidence in using telecommunications as an instructional resource prior to your participation in the Telemation Project.

None ____
Low ____
Personal use ____
Integrate into classroom ____
Teach others ____

II. Planning and Support

1. Indicate (√) the number of accessible telecommunications resources in your classroom:

	0	1-5	6-10	11+
Computer(s)	____	____	____	____
Modem(s)	____	____	____	____
Phone line(s)	____	____	____	____
Networks (LAN/WAN)	____	____	____	____

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2. Does your principal and / or assistant principal use telecommunications? (√)
   Never _____
   Sometimes _____
   Often _____

3. Did your principal and / or assistant principal attend a Telemation Training Institute? ..... yes_____ ..... no_____ ..... not sure_____

4. Since the Telemation Institute, what has been the level of support by your principal and / or assistant principal for using telecommunications in the classroom? (√)
   None _____
   Little _____
   Moderate _____
   High _____

5. Do you have access to a local, ongoing school or district technical support person? (√) yes _____ no_____
   If yes, is the support ..... adequate_____ ..... inadequate_____

6. Does your district have an Educational Technology Plan which is currently being implemented? (√) ..... yes_____ no____ not sure_____
   If yes:
   a. Does that plan include a telecommunications component? ..... yes_____ no____ not sure_____
   b. Is the telecommunications component being implemented in your district? ..... yes_____ no____ not sure_____
   c. Were you or other teachers involved in developing the plan? ..... yes_____ no____ not sure_____

7. Does your school provide funding earmarked for telecommunications? ..... yes____ ...no____ not sure_____
   If yes, indicate the extent to which the following funding sources are available for telecommunications: (circle)

	None	Adequately			Significantly
a. General Fund	1	2	3	4	5
b. SB 1510 Grants	1	2	3	4	5
c. School Improvement Program (SIP)	1	2	3	4	5
d. Chapter 1	1	2	3	4	5
e. Business	1	2	3	4	5
f. Other _____	1	2	3	4	5

9. Are you a member of a computer-using educator's organization? (√) ..... yes _____ ..... no_____
   If yes, what organizational resources are helpful? ..... newsletter_____ ..... annual conference____
   regional conference_____ ..... member networking____ ..... other____

10. Indicate (√) the extent to which each of the following (a-k) is accessible, used and is useful:

	Accessibility			Use			Usefulness		
	never	sometime	often / often	low	moderate	high	never	sometime	often
a. District administrative support for curriculum project activities	____	____	____	____	____	____	____	____	____
b. School administrator support for curriculum project activities	____	____	____	____	____	____	____	____	____
c. Telemation	____	____	____	____	____	____	____	____	____
d. California Technology Project (CTP) Resources	____	____	____	____	____	____	____	____	____
e. CORE	____	____	____	____	____	____	____	____	____
f. Other online resources	____	____	____	____	____	____	____	____	____
	____	____	____	____	____	____	____	____	____
h. Time allocated for planning and implementing curriculum project activities	____	____	____	____	____	____	____	____	____

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	Accessibility			Use			Usefulness		
	never	sometime	often	low	moderate	high	never	sometime	often
i. On-line moderator	____	____	____	____	____	____	____	____	____
j. Technical support	____	____	____	____	____	____	____	____	____
k. Curriculum integration help	____	____	____	____	____	____	____	____	____
l. Appropriate content available online	____	____	____	____	____	____	____	____	____

If you (√) never under accessibility, explain: _____

_____

_____

III. Use of Telecommunications

1. How many hours per week do your students spend using telecommunications during the school day?
   Hours per week (circle) ..... 0 1 2 3 4 5 6+

2. Has telecommunications become a regular part of instruction or a resource for you? (√)
   ..... yes_____ ..... no _____

   If yes, cite an example: _____

   _____

3. What is your primary telecommunications service provider? (√)

   a. CSUNet/CORE _____
   b. America Online (AOL) _____
   c. PBS - KQED Learning Link _____
   d. Prodigy/ Classroom Prodigy _____
   e. eWorld _____
   f. CompuServe _____
   g. Other _____ _____

4. What are the information sources you find most useful to support teaching and learning?
   (circle each source and rate level of support)

	None		Moderate		Significant	Not Sure
a. CORE	1	2	3	4	5	?
b. NEA Online	1	2	3	4	5	?
c. GINA	1	2	3	4	5	?
d. Special Net	1	2	3	4	5	?
e. Goldmine (CDE)	1	2	3	4	5	?
f. INet	1	2	3	4	5	?
g. PBS Learning Link	1	2	3	4	5	?
h. ERIC	1	2	3	4	5	?
i. CalTIP	1	2	3	4	5	?
j. Kidlink	1	2	3	4	5	?
k. Other _____	1	2	3	4	5	?

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5. What do you use telecommunications for? First (√) if accessible at your site, then circle level of use (one or more):

		Accessible	Usage is: Not at all	Monthly	Weekly	Daily
a.	e-mail	_____	1	2	3	4
b.	database searches	_____	1	2	3	4
c.	conference/forums	_____	1	2	3	4
d.	other _____ (specify)	_____	1	2	3	4

IV. Telemation Curriculum Project

1. Please check (√) which of the following that best describes the status of your Telemation Curriculum Project (TCP):

   a. I am <u>not</u> planning to do a curriculum project. _____
   b. I am planning a curriculum project but have not had an opportunity to start. _____
   c. I am currently implementing my curriculum project. _____
   d. I plan to continue my curriculum project into next year. _____
   e. I completed my project. _____

Note: If you checked a or b, move ahead to section V and continue to answer remaining questions.

2. Circle the grade(s) in which your Telemation Curriculum Project (TCP) is being/will be used:

   K 1 2 3 4 5 6 7 8 9 10 11 12

3. Circle the month/year you started implementing your TCP.

   1994 1995 Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec

4. Indicate (√) the content area (s) addressed in your TCP:

   Mathematics _____
   Science _____
   Language Arts _____
   History/Social Science _____
   Visual/Performing Arts _____
   Other _____

5. Do you have the equipment needed to implement your TCP? ..... yes_____ ....no _____

6. Describe the most unique features of your project?_____

   _____

7. Do you plan to continue or expand the project? ..... yes_____ ....no _____
   What are the main features, elements, or activities you think should be continued?

8. Would you be interested in assisting others adopting and/or adapting your project? .....yes_____....no _____

V. Reactions to Telemation as a Resource

		None		Moderate		Significant
1.	To what extent did the Telemation Institute training prepare you to integrate telecommunications into instruction? (circle)	1	2	3	4	5
2.	To what extent was online support available after your training? (circle)	1	2	3	4	5
3.	To what extent was the hands-on experience of the Institute useful? (circle)	1	2	3	4	5

4. To what extent did Telemation provide follow-up support?

Support from...	None		Moderate		Great extent
Telemation Staff	1	2	3	4	5
Telementors	1	2	3	4	5
Telemation Partners	1	2	3	4	5
On-line support	1	2	3	4	5
Other _____	1	2	3	4	5

5. How often are you communicating with others in the project (circle)?

	Never	Some	Frequently	Very Frequently	
a. With your state Telementor	1	2	3	4	5
b. With your local colleagues	1	2	3	4	5
c. With project leadership	1	2	3	4	5
d. Other _____	1	2	3	4	5

VI. Change (as a result of your participation in Telemation)

For each of the following categories, rate the observed change among <u>students</u> participating in the instructional activities of this project and with <u>yourself</u> in relation to your students (circle one for each item below; circle N/A if item does not relate to your project):

A. <u>Student</u> Outcomes

1. To what extent has the project INCREASED OR IMPROVED students'...

		Not at all		Moderately		Significantly	N/A
a.	Attendance/punctuality	1	2	3	4	5	N/A
b.	Interest in telecommunications use	1	2	3	4	5	N/A
c.	Frequency of telecommunications use	1	2	3	4	5	N/A
d.	Proficiency in the use of telecommunications	1	2	3	4	5	N/A
e.	Classroom behavior and study skills	1	2	3	4	5	N/A
f.	Problem-solving and higher order thinking skills	1	2	3	4	5	N/A
g.	Knowledge and skills for subject areas	1	2	3	4	5	N/A
h.	Overall interest in school	1	2	3	4	5	N/A
i.	Academic performance	1	2	3	4	5	N/A
j.	Student initiative or autonomy	1	2	3	4	5	N/A
k.	Participation in cooperative learning	1	2	3	4	5	N/A
l.	Self-esteem	1	2	3	4	5	N/A
m.	Completion of classroom assignments	1	2	3	4	5	N/A
n.	Time engaged in school work	1	2	3	4	5	N/A
o.	Other _____	1	2	3	4	5	N/A

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2. For each area where '4' or '5' was circled in Question 1, elaborate on the student change and how the project contributed to the change.

Item letter from Question 1	Describe the student change and how the project contributed to the change

3. Think of a particular student in your class that has improved his/her grade or performance as a result of telecommunications use. Describe briefly the "story" about this student: what made the difference, what does the student do now that wasn't done before, etc.:

B. Staff Outcomes

1. To what extent has the Telemation Curriculum Project INCREASED your opportunities to:

	None		Moderately		Significantly	
a. Access and use resources beyond textbooks and other curriculum materials	1	2	3	4	5	N/A
b. Provide student problem-solving activities	1	2	3	4	5	N/A
c. Provide student-centered learning opportunities	1	2	3	4	5	N/A
d. Make teaching more interesting	1	2	3	4	5	N/A
e. Interact with colleagues	1	2	3	4	5	N/A
f. Interact with students	1	2	3	4	5	N/A
g. Provide simulation experiences	1	2	3	4	5	N/A
h. Gain confidence in your own telecommunications use	1	2	3	4	5	N/A
i. Integrate telecommunications into the curriculum	1	2	3	4	5	N/A
j. Evaluate the use and impact of educational telecommunications	1	2	3	4	5	N/A
k. Integrate telecommunications into curriculum and instruction	1	2	3	4	5	N/A
l. Overcome isolation in your own classroom	1	2	3	4	5	N/A
m. Other _____	1	2	3	4	5	N/A

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2. For each area where 4 or 5 was circled in Question 1, elaborate on the change and how the project contributed to the change.

Item letter from Question 1	Describe the change(s) and how the project contributed to them.

3. Think about your whole class (focus on one if secondary). Do you think that report card grades have improved as a result of technology use: (circle)..... Yes____..... No____.... Not sure____

4. If you answered yes above, estimate the percentage of students in your class that improved their grades (by at least one or more full grade points) as a result of technology use (write in percentage)..... ____%

5. Considering the overall funding and your efforts on behalf of this project, indicate the statement below that best represents your assessment of the project's overall benefits for teaching students (circle one):

- Benefits were clearly not worth the effort..... 1
- Some benefits for students were attained but could have been accomplished in other more cost-effective ways..... 2
- Moderate benefits for students were attained that probably could not have been attained without the project..... 3
- Important benefits for students were attained and the effort was clearly worth it..... 4

6. Indicate the most important resources you need to insure continuing educational telecommunications usage in your classroom and the level of need. (circle)

	Not needed		Needed		Urgent need
a. Technical support	1	2	3	4	5
b. Administrative support	1	2	3	4	5
c. Increased funding	1	2	3	4	5
d. More time	1	2	3	4	5
e. Curriculum integration assistance	1	2	3	4	5
f. Other _____	1	2	3	4	5

7. List the most positive features or benefits of Telemation for you. _____

_____

_____

8. List the elements of Telemation that were of <u>least</u> or <u>no</u> benefit to you. _____

_____

_____

9. In summary, do you feel your use, to date, of telecommunications as a classroom resource has been:

Unsuccesstul (a waste of time)..... _____
Successful (but won't use again)..... _____
Successful (and will use again)..... _____

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VIII. Final Comments

We are looking for overall recommendations and input from you the participants in the Telemation Project about the program and its resources. Please be specific

Far West

TELEMATION PROJECT EVALUATION SURVEY

1/25/95

ADMINISTRATIVE PARTICIPANTS

Workshop code: WC

School code: SC

(For office use only)

I. Background

1. Professional status (√): .....Full time administrator _____ .....Part time administrator _____

2. Grades at your school (circle all that apply): K 1 2 3 4 5 6 7 8 9 10 11 12

   a. What percentage of students in your school do you estimate have computers with telecommunications technology at home? (√)

   0___ 1-10%___ 11-25% ___ 26-50%___ 51-75%___ 76+%___

   b. Estimate the percentage of students with special needs in your school (write in percentage):

   Bilingual ___% Chapter 1___% Special Ed ___% Gifted ___% Other ___%

3. Estimate (√) the time you allocate during the week for you to learn and use telecommunications.

At Work		At Home	
None	____	None	____
1 hour per week	____	1 hour per week	____
3-6 hours per week	____	3-6 hours per week	____
6+ hours per week	____	6+ hours per week	____

4. Indicate (√) your use of telecommunications prior to participation in the Telemation Project.

	Never	Occasional	Often	Very often
a. At home/out of school	____	____	____	____
b. For record keeping/administrative use	____	____	____	____

5. Indicate (√) your level of confidence in using telecommunications as an instructional resource prior to your participation in the Telemation Project.

None ..... _____
Low ..... _____
Personal use ..... _____
Administrative usage ..... _____
Teach others ..... _____

II. Planning and Support

1. Indicate (√) the number of accessible telecommunications resources in your school:

	0	1-5	6-10	11+
Computer(s)	_____	_____	_____	_____
Modem(s)	_____	_____	_____	_____
Phone line(s)	_____	_____	_____	_____
Networks (LAN/WAN)	_____	_____	_____	_____

2. Do you now use telecommunications as a result of the Telemation project? (√)

Never ..... _____
Sometimes ..... _____
Often ..... _____

3. How many hours of the administrative Telemation training did you attend? ....0 ___ .....1-3 ___ ....4-6 ___

4. Since your Telemation Institute, what has been your level of support for your Telementor in their use of telecommunications in the classroom? (√)

None _____
Little _____
Moderate _____
High _____

5. Do you have access to a local, ongoing school or district technical support person? (√) yes _____ no _____
If yes, is the support ..... adequate _____ ..... inadequate _____

6. Does your district have an Educational Technology Plan which is currently being implemented? (√) ..... yes _____ ..... not sure _____
If yes:
   a. Does that plan include a telecommunications component? ..... yes _____ ..... not sure _____
   b. Is the telecommunications component being implemented in your district? ..... yes _____ ..... not sure _____
   c. Were you or other administrators involved in developing the plan? ..... yes _____ ..... not sure _____

7. Does your school provide funding earmarked for telecommunications? ..... yes _____ ..... not sure _____
If yes, indicate the extent to which the following funding sources are available for telecommunications: (circle)

	None		Adequately		Significantly
a. General Fund	1	2	3	4	5
b. SB 1510 Grants	1	2	3	4	5
c. School Improvement Program (SIP)	1	2	3	4	5
d. Chapter 1	1	2	3	4	5
e. Business	1	2	3	4	5
f. Other _____	1	2	3	4	5

9. Are you a member of a computer-using educator's organization? (√) ..... yes _____ ..... no _____
If yes, what organizational resources are helpful? ..... newsletter _____ ..... annual conference _____
regional conference _____ ..... member networking _____ ..... other _____

10. Indicate (√) the extent to which each of the following is accessible, used and is useful:

	Accessibility			Use			Usefulness		
	never	sometime	often	low	moderate	high	never	sometime	often
a. District administrative support for curriculum project activities	____	____	____	____	____	____	____	____	____
b. Fellow Telemation administrators	____	____	____	____	____	____	____	____	____
c. ACSA	____	____	____	____	____	____	____	____	____
d. California Technology Project (CTP) Resources	____	____	____	____	____	____	____	____	____
e. CORE									
f. Other online resources	____	____	____	____	____	____	____	____	____
g. District-provided staff development	____	____	____	____	____	____	____	____	____
i. On-line moderator	____	____	____	____	____	____	____	____	____
j. Technical support	____	____	____	____	____	____	____	____	____

If you (√) never under accessibility, explain: _____

_____

III. Use of Telecommunications

1. What is your primary telecommunications service provider? (√)

   a. CSUNet / CORE _____
   b. America Online (AOL) _____
   c. PBS - KQED Learning Link _____
   d. Prodigy / Classroom Prodigy _____
   e. eWorld _____
   f. CompuServe _____
   g. Other _____ _____

2. What are the information sources you find most useful to support teaching and learning? (circle each source and rate level of support)

	None		Moderate		Significant	Not Sure
a. CORE	1	2	3	4	5	?
b. NEA Online	1	2	3	4	5	?
c. GINA	1	2	3	4	5	?
d. Special Net	1	2	3	4	5	?
e. Goldmine (CDE)	1	2	3	4	5	?
f. INet	1	2	3	4	5	?
g. PBS Learning Link	1	2	3	4	5	?
h. ERIC	1	2	3	4	5	?
i. CalTIP	1	2	3	4	5	?
j. Kidlink	1	2	3	4	5	?
k. Other _____	1	2	3	4	5	?

3. What do you use telecommunications for? First (√) if accessible at your site, then circle level of use (one or more)

	Accessible	Usage is: Not at all	Monthly	Weekly	Daily
a. e-mail	_____	1	2	3	4
b. database searches	_____	1	2	3	4
c. conference/forums	_____	1	2	3	4
d. other _____ (specify)	_____	1	2	3	4

IV. Telemation Curriculum Project

1. Please check (√) which of the following that best describes the status of your school Telemator's Curriculum Project (TCP):

   a. They are <u>not</u> planning to do a curriculum project _____
   b. They are planning a curriculum project but have not had an opportunity to start _____
   c. They are currently implementing my curriculum project _____
   d. They plan to continue my curriculum project into next year _____
   e. They have completed my project _____

Note: If you checked a or b, move ahead to section V and continue to answer remaining questions.

2. Circle the grade(s) in which your Telemation Curriculum Project (TCP) is being / will be used:

   K 1 2 3 4 5 6 7 8 9 10 11 12

3. Circle the month / year they started implementing their TCP

   1994 1995 Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec

4. Indicate (x) the content area (s) addressed in their TCP

Mathematics	_____
Science	_____
Language Arts	_____
History/Social Science	_____
Visual/Performing Arts	_____
Other	_____

5. Do they have the equipment (computer, modem, line access) needed to implement their TCP? ..... yes _____ no _____

6. Describe the most unique features of their project? _____

_____

7. Do they plan to continue or expand the project? ..... yes _____ no _____
What are the main features, elements, or activities you think should be continued?

8. Would you be interested in assisting others adopting and/or adapting your school's telementor's project?
yes _____ ..... no _____

V. Reactions to Telemation as a Resource

	None		Moderate		Significant
1. To what extent did your administrative Telemation Institute training prepare you to integrate telecommunications into instruction? (circle)	1	2	3	4	5
2. To what extent was online support available after your training? (circle)	1	2	3	4	5
3. To what extent was the hands-on experience of the Institute useful? (circle)	1	2	3	4	5

4. To what extent did Telemation provide follow-up support?

Support from...	None		Moderate		Great extent
ACSA	1	2	3	4	5
Telemation Staff	1	2	3	4	5
Telementors	1	2	3	4	5
Telemation Partners	1	2	3	4	5
On-line support	1	2	3	4	5
Other _____	1	2	3	4	5

5. How often are you communicating with others in the project (circle)?

	Never	Some	Frequently	Very Frequently
a. With your state administrative Telementor	1	2	3	4	5
b. With your local administrative Telementor	1	2	3	4	5
c. With project leadership	1	2	3	4	5
d. Other _____	1	2	3	4	5

VI. Change (as a result of your participation in Telemation)

For each of the following categories, rate the observed change among students at your school participating in the instructional activities of this project (circle one for each item below; circle N/A if item does not relate to your project):

A. Student Outcomes

1. To what extent has the project INCREASED OR IMPROVED students'

		Not at all		Moderately		Significantly	N/A
a.	Attendance punctuality	1	2	3	4	5	N/A
b.	Interest in telecommunications use	1	2	3	4	5	N/A
c.	Frequency of telecommunications use	1	2	3	4	5	N/A
d.	Proficiency in the use of telecommunications	1	2	3	4	5	N/A
e.	Classroom behavior and study skills	1	2	3	4	5	N/A
f.	Problem-solving and higher order thinking skills	1	2	3	4	5	N/A
g.	Knowledge and skills for subject areas	1	2	3	4	5	N/A
h.	Overall interest in school	1	2	3	4	5	N/A
i.	Academic performance	1	2	3	4	5	N/A
j.	Student initiative or autonomy	1	2	3	4	5	N/A
k.	Participation in cooperative learning	1	2	3	4	5	N/A
l.	Self-esteem	1	2	3	4	5	N/A
m.	Completion of classroom assignments	1	2	3	4	5	N/A
n.	Time engaged in school work	1	2	3	4	5	N/A
o.	Other _____	1	2	3	4	5	N/A

2. For each area where "4" or "5" was circled in Question 1, elaborate on the student change and how the project contributed to the change.

Item letter from Question 1	Describe the student change and how the project contributed to the change

3. Think of a particular student in your school that has improved his/her grade or performance as a result of telecommunications use. Describe briefly the "story" about this student: what made the difference, what does the student do now that wasn't done before, etc.:

B. Administrative Outcomes

1. To what extent has your participation in the Telemation Project INCREASED your opportunities to:

	None		Moderately		Significantly	
a. Access resources not normally used	1	2	3	4	5	N/A
b. Provide student problem-solving activities	1	2	3	4	5	N/A
c. Provide student-centered learning opportunities	1	2	3	4	5	N/A
d. Make teaching more interesting	1	2	3	4	5	N/A
e. Interact with colleagues	1	2	3	4	5	N/A
f. Interact with students	1	2	3	4	5	N/A
g. Provide simulation experiences	1	2	3	4	5	N/A
h. Gain confidence in your own telecommunications use	1	2	3	4	5	N/A
i. Integrate telecommunications into the curriculum	1	2	3	4	5	N/A
j. Evaluate the use and impact of educational telecommunications	1	2	3	4	5	N/A
k. Integrate telecommunications into curriculum and instruction	1	2	3	4	5	N/A
l. Overcome isolation in your working environment	1	2	3	4	5	N/A
m. Other _____	1	2	3	4	5	N/A

2. For each area where 4 or 5 was circled in Question 1, elaborate on the change and how the project contributed to the change.

Item letter from Question 1	Describe the change(s) and how the project contributed to them.

3. Think about the students of your school's Telementor. Do you think that report card grades have improved as a result of technology use: (circle)..... Yes ____ ..... Not sure ____

4. If you answered yes above, estimate the percentage of students that improved their grades (by at least one or more full grade points) as a result of technology use (write in percentage)..... ____%

5. Considering the overall funding and your efforts on behalf of this telecommunications project, indicate the statement below that best represents your assessment of the project's overall benefits for teaching students (circle one):

- Benefits were clearly not worth the effort..... 1
- Some benefits for students were attained but could have been accomplished in other more cost-effective ways..... 2
- Moderate benefits for students were attained that probably could not have been attained without the project..... 3
- Important benefits for students were attained and the effort was clearly worth it..... 4

6. Indicate the most important resources you need to insure continuing educational telecommunications usage in your school and the level of need. (circle)

	Not needed		Needed		Urgent need
a. Technical support	1	2	3	4	5
b. District support	1	2	3	4	5
c. Increased funding	1	2	3	4	5
d. More time	1	2	3	4	5
e. Curriculum integration assistance	1	2	3	4	5
f. Other _____	1	2	3	4	5

7. List the most positive features or benefits of Telemation for you. _____

_____

_____

8. List the elements of Telemation that were of <u>least</u> or <u>no</u> benefit to you. _____

_____

_____

9. In summary, do you feel your school's telemator's use, to date, of telecommunications as a classroom resource has been:

Unsuccessful (a waste of time) _____
Successful (but won't use again) _____
Successful (and will use again) _____

VIII. Final Comments

We are looking for overall recommendations and input from you the participants in the Telemation Project about the program and its resources. Please be specific.

TELEMATION TRAINING EVALUATION FORM

	Strongly Disagree		Agree		Strongly Agree
1. **Objectives:** The objectives of the Telemation Training were well formulated, clear and addressed the topic.	1	2	3	4	5
2. **Content:** The information presented was relevant to the objectives.	1	2	3	4	5
3. **Understandability:** The content was appropriate to my level of understanding and experience.	1	2	3	4	5
4. **Expectations:** The Telemation Training met my expectations.	1	2	3	4	5

5. I have or will have the following resources to implement telecommunication applications at my school:

	Need		Adequate		Excellent
Computer, Modem, Phone Line	1	2	3	4	5
Software	1	2	3	4	5
Technical Support	1	2	3	4	5
Curriculum Support	1	2	3	4	5
Staff Development	1	2	3	4	5
District Office Support	1	2	3	4	5
Budget	1	2	3	4	5

6. When I return to my school, my first step will be to _____

_____

7. By Nov. '94, I plan to _____

_____

8. Major strengths of the TelemationTraining: _____

_____

_____

9. Recommendations to improve the Telemation Training: _____

_____

_____

10. How will this Telemation Training make a difference for the students in my classroom?

_____

_____

_____

	Needs to Improve		Average		Excellent
Overall Rating for the TelemationTraining:	1	2	3	4	5

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CLASSROOM TELECOMMUNICATION INTERVENTION PLAN (C-TIP)

his form is designed to facilitate the planning and development of an intervention plan which will describe the specific ctivities necessary to successfully implement and integrate telecommunications into teaching and learning. This plan is lso an important prerequisite for monitoring and assessing the impact of the project and its components and to identify romising practices for future expansion and dissemination.

C-TIP Title _____

Developer/Implementor _____

District _____ **School** _____

Telephone Number(s) _____ **E-Mail** _____

Department/Grade(s) _____

Plan Duration: Anticipated starting date ___/___/___ Anticipated ending date ___/___/___

NSTRUCTIONAL EMPHASIS

nglish Language Arts ❑ Math ❑ Science ❑ History / Social Science ❑ Multidisciplinary ❑
)ther content and instructional areas of emphasis: _____

TUDENTS

Student populations

Estimated number of students who will participate:_____Grade level(s):_____

Number of LEP students participating in the C-TIP_____

Other special student populations_____

Student instructional needs to be addressed:

STUDENT OBJECTIVES(S) ADDRESSED

TEACHER OBJECTIVES (Instructional project, lesson, units, etc.)

INSTRUCTIONAL PLAN

Describe the following type of telecommunication used

Database access ❑ Conferencing ❑ News Groups ❑ E-mail ❑

Other telecommunications resources used_____

_____

Briefly explain the instructional strategies and the types of activities or tasks that students will engage in:

jor Activity Benchmarks	Estimated Dates		
	Start	End	Ongoing

RESOURCES (what is needed to carry out the plan)	Estimated Dates	
	In place	Needed
Hardware		
Software		
Connectivity		
Staff Development		
Technical Support		
Other		

Commitments needed from the school/district. Please explain (release days, funding, principal support, etc.)

EVALUATION

Evaluation Question(s) (related to student and staff objectives)

Measurement Procedures (qualitative, quantitative, ongoing, summative)

Reporting Procedures (when, to whom, for what purpose)

For additional assistance
contact Far West Laboratory
CalTIP 800-240-2744

B. State Telementor Curriculum Plans

1. Matrix of State Telementor Curriculum Plans
2. State Telementor Curriculum Plans

STATE TELEMENTOR CURRICULUM PLANS

Far West Laboratory
415-565-3086

Curriculum Plan Title (Author)	Subject Area(s)							Grade Level(s)			Project Length		Technology Used	
	Math	Science	Language Arts	Economics	Social Studies	Art	Foreign Language	Elementary	Middle	High School	# of Weeks	# of class periods per week	Telecommunications	Other (eg. Video, computer)
Scientists and Social Responsibility (Shayler)		✔								✔	10-12	1	✔	✔
Professional and Student Journalists Meet On-line (Perez)			✔							✔	15	1	✔	
Using a Computer From Word Processing to Telecomputing in All Stages of the Writing Process (Sears)			✔							✔	9		✔	✔
Plastic Recycling and Waste Management (Barenbaum)		✔	✔						✔	✔	4-8	3	✔	✔
Collaborative Teamwork: Developing Multimedia Programs Using On-line Telecommunications (Boller)	✔	✔	✔		✔	✔		✔			on-going		✔	✔
How Many 3's Do You See? (Quiring)	✔		✔					✔			3	5	✔	✔
Change and the Weather (Scrivano)		✔						✔	✔	✔	4-8	3	✔	

Curriculum Plan Title (Author)	Subject Area(s)							Grade Level(s)			Project Length		Technology Used	
	Math	Science	Language Arts	Economics	Social Studies	Art	Foreign Language	Elementary	Middle	High School	# of Weeks	# of class periods per week	Telecommunications	Other (eg Video, computer)
El Pasajero (Tovares)			✔		✔		✔	✔			8-12	5	✔	✔
Multimedia Reports: Using Emerging Technologies in Art (Sakatani)						✔			✔		2-3	5	✔	✔
AVirtual Treasure Hunt in Spanish-Speaking Countries (Berthon-Hernandez)							✔			✔	15		✔	✔
Energy -- What's the Big Deal? (Phelan)		✔								✔	3		✔	✔
Pets Around the World (Bock)	✔	✔	✔		✔			✔			6	2	✔	
Where the Lilies Bloom: A Group Discovery Reading Unit (Sprague)			✔					✔	✔		4-6		✔	
Collaborative Video Production (Crumm)						✔		✔	✔	✔	8-12	3	✔	✔
Would You Sell Ice Cubes to Icelanders? (Korobkin)				✔						✔	2+	5	✔	
Themes Across History (Berger)					✔				✔	✔	6	3	✔	

Curriculum Plan Title (Author)	Subject Area(s)							Grade Level(s)			Project Length		Technology Used	
	Math	Science	Language Arts	Economics	Social Studies	Art	Foreign Language	Elementary	Middle	High School	# of Weeks	# of class periods per week	Telecommunications	Other (eg. Video, computer)
A Multi-age/ Special Needs Collaborative Project (King)		✔	✔					✔	✔	✔	4	5	✔	
An Earth Shaking Education (Scott Smith)	✔	✔	✔		✔				✔		2	10	✔	✔
Day in the Life (Sheldon Smith)	✔	✔	✔		✔			✔	✔	✔	2+		✔	

1994 TELEMENTOR PROJECTS

'lliot Barenbaum
Marina Middle School, San Francisco, CA

This project involved students becoming aware of he difficulties of disposing of plastics. Students ept track of their own and their family's use of lastics. They contacted and shared information ith environmentalists and waste disposal xperts.

iane Berthoin-Hernandez
orth Monterey County High School
astroville, CA

hird-year Spanish students "adopted" students a Spanish-speaking elementary school class-oom. They researched and telecommunicated nformati about a Spanish-speaking country to he students in Spanish. They presented the nformation to the elementary students in the orm of a treasure hunt. Clues were developed from esearch done both off- and on-line.

ell Bock
mperial County Office of Education

tudents do scientific research and telecommuni-ate and compare their data with children around he United States using National Geographic Kids etwork.

like Crumm
ierra Avenue Elementary School, Oroville, CA

n order to appreciate the power of the media, stu-ents wrote and filmed commercials. They ex-hanged their videos with another class and did n-line critiques of one another's products.

ob King
mpire Elementary School, Empire, CA

roups of students with highly divergent abilities orked together using a climate modeling compu-r package to predict what changes in the earth's imate would be affected if certain characteristics the earth were changed.

arsha Korobkin
an Diego City Schools, San Diego, CA

tudents used on-line data services to research nd develop plans for international marketing. hey researched and found an American com-any's product for which they wrote overseas mar-eting strategies in order to sell the product to a articular country.

Andrea Perez
Lemoore High School, Lemoore, CA

Students designed page layouts, wrote articles and submitted their work to an on-line editor for professional critiques. They used on-line news services to compare lo al and national news and to investigate how stories are written differently at the national and local levels.

Rick Phelan
Sonoma Valley High School, Sonoma, CA

Students in combined math and science classes researched their own and the world's energy consumption. They learned about forms of energy and participated in projects in which they investigated different methods of generating electricity. Special needs and LEP students were mainstreamed into all aspects of this project.

Gary Quiring
Winchell Elementary School, Fresno, CA

Students learned patterns of three in this thematically integrated unit which covered math and literature. Students telecommunicated with another class and exchanged math problems and reading. They also communicated with a fairy tale character who answered their questions about math and the stories they were reading.

Marilyn Renger
Balboa Middle School, Ventura, CA

Students compared past and present events to find commonalities and relationships. Working in groups, they researched both on-line and with traditional materials to generate discussion and writing about critical attributes of current and past happenings.

Jim Roller
Science and Tech Center, Apple Valley, CA

Students used California State Frameworks and on-line resources to access information in order to design lessons for special needs students. They learned to use Hyperstudio and a variety of other techniques to devise, communicate and access information for these projects.

Ken Sakatani
Bayside Middle School, San Mateo, CA

Students created video reports about an artist. They used aesthetic valuing and perception as

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well as creative expression in preparing the group projects which were based on the artists's life and work.

Phillip Scrivano
Crista McAuliffe Elementary School
Bakersfield, CA

Students participated in a weather project by predicting weather using classroom tools and on-line resources. Data was gathered and compared with the data gathered by three other classes.

Bill Sears
Mesa Verde High School, Citrus Heights, CA

Through the use of library resources, students wrote an autobiography which included their heritage, their own past, and their speculations about their future. They searched on-line for genealogical resources related to their own families. Students shared their finished product with students from other places through telecommunication.

Bob Shayler
San Leandro High School, San Leandro, CA

Students defined personal and social responsibility for themselves. They reported on a scientist and his/her product or process and how that scientist met (or didn't meet) his/her responsibilities to society in developing that scientific product.

Scott Smith
Valley Oak Middle School, Visalia, CA

Students plotted the locations of earthquakes through the use of on-line resources. They surveyed people who live in non-quake areas to determine their views about living in an earthquake area, communicated with students who have experienced an earthquake, and prepared a video to show how to prepare for an earthquake.

Sheldon Smith
Atascadero Junior High School, Atascadero, CA

This class put out a call for students from around the world to join them in recording their activities each hour for one day. Using data generated by the responses, students compared and contrasted their school days, amount of television viewing, and attitudes toward school with that of the respondents. They also replied to a student from another school, speculated about response differences at a different time of year, and pinpointed the replies by time and space on a map.

Mitchell Sprague
Mendocino Elementary School, Mendocino, CA

Where the Lilies Bloom is the focus for this unit which involves telecommunications between classes in California and North Carolina where the novel takes place. Students wrote and received critiques from one another as well as tested their perceptions of life in North Carolina presently and in the past.

Maria Tovares
Corona Avenue Elementary School, Bell, CA

This monolingual second grade Spanish class paired with a third year high school Spanish class to develop an understanding and appreciation of other cultures. The high school students sent their elementary buddies on a trip to an unknown country through telecommunications. The high school students telecommunicated information about the country. The elementary students developed hypercards to show what they had learned and shared them with the high school students.

Note: The twentieth telementor, **Rowland Baker** of the Santa Cruz County Office of Education, planned and presented training for the administrators of the local telementors who will be trained at the institutes.

Scientists and Social Responsibility

Bob Shayler

San Leandro High School
San Leandro, CA

Subject Areas:

Integrated Science
Grade Levels: **9-12**

Physics, Chemistry, Biology

Length of Project:
10-14 weeks with six to eight class days devoted to full class project activities

Abstract:

Students defined personal and social responsibility for themselves. They reported on a scientist and his/her product or process and how that scientist met (or didn't meet) his/her responsibilities to society in developing that scientific product.

I. Introduction

Science and scientists are often viewed as dry and rather boring although occasionally useful. However, TV news about the latest local crimes and the national sports plus personal gossip about who started the lunch time fight are of high interest to almost everyone. The drama and mystery of daily events and to whom the fault or credit for those high interest events may go is a source of much research and reporting at every school and in every home. Science and scientists can be brought as alive by looking at them as regular people who, like the villains and stars of TV and the kids who make mistakes at lunch, have real lives which include personal decisions which may lead to successes and failures.

Scientists do sometimes have a larger impact upon us than the results of last Friday's game. Some of what a scientist may do over the course of her/his life may become the underlying cause of major changes in how well and how long the rest of us live our lives. While looking at a scientist's life from the same view as one would examine one's own life, it is often necessary to recall that what that scientist did or did not do has had and will have a measurable effect on us all. This project "Scientists and Social Responsibility" asks the student to examine a scientist's life and work and apply the same criteria for responsibility which one would apply to oneself in order to determine blame or credit just as one might do for a lunch time fight.

"Alfred Nobel, founder of the Nobel Prizes, made his substantial fortune largely through the manufacture of the explosive dynamite, which he invented in 1866. A reclusive man and a pacifist, he was stereotyped as a "mad scientist" when his nitroglycerin factory exploded in 1864. He established a fund of approximately $8.5 million to honor selected achievements benefiting humankind." (The Bettmann Archive) (1) Nobel was so unhappy with the wartime uses of his inventions that he gave back his earnings in an attempt through prizes to reward those persons who worked toward the betterment of humankind.

"J. Robert Oppenheimer, a prominent American physicist, became known as the father of the atom bomb. During World War II he directed the Los Alamos laboratory in New Mexico, where the first atom bomb was designed and built. In 1963 he received the AtomicEnergy Commission's prestigious

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report with computer based technology tools.

Note: If a student chooses a scientist who is female, not alive, or not from Europe or North America, s/he is unlikely to find information on the Internet.

The student will:

1. use a variety of resources to obtain information about the scientist and the work or product of that scientist's life. Such resources may include:
    - on-line encyclopedia from America On-line or Prodigy
    - CD-ROM based encyclopedia such as Grolier's
    - specific resources from databases such as Dialog and CompuServe
    - specific resources using Internet tools from GINA or other Internet hosts which support gopher/Veronica/WAIS/Mosaic/etc.
    - telephone and personal interviews with resource people network email resources including mail lists newsgroup resources
    - printed resources such as journals and books

2. demonstrate the ability to use email by reporting progress on the project to the teacher via email

3. demonstrate skill in the use of computer technology by submitting the report as either a word processed printed paper or on-line as a text or formatted file.

III. Activities

1. By brainstorming, class discussion, viewing videos, and role playing, students identify their own sets of criteria for social responsibility of one's profession and work

    - Brainstorm:
    How is social responsibility determined? What does it mean to me? What are my responsibilities to society and my fellow humans?

    - Discussion:
    Student becomes an advocate for some important and popularly known scientific process or invention (choose an example you think appropriate such as television or birth control methods or rockets or

Assessment	submitting a written project for inclusion as an on-line resource.

1. portfolio of student research efforts including:
    - results of on-line searches
    - copies of email and newsgroup messages
    - library source material
    - interviews with and vitae from people
2. evaluation of paper based on the following criteria:
    - student criteria for responsibility identified
    - biographical information about scientist
    - product information about invention/process/research supported conclusion of scientist's responsibility
3. reporting of paper:
    - may be oral presentation to class or on-line submission of formatted file
4. evaluation of English composition by a teacher of English
5. extra credit is given for:
    - identification of a scientist either not already known by the teacher or of a female or non-EuropeanAmerican scientist
    - submission of the report as a formatted word processed file on-line (see #3 above)

End Notes:

(1) from The Academic American Encyclopedia (Electronic Version), copyright) 1993 Grolier, Inc., Danbury, CT (CD-ROM Mac version 1994)

References:

Braun, Eric, ed. (1994). The Internet Directory. New York and Toronto: Fawcett Columbine.

Krol, Ed. (1993). The Whole Internet User's Guide & Catalog. Sebastopol: O'Reilly & Associates, Inc. email: nuts@ora.com

Second to None - A Vision of the New California High School. (1992), Sacramento: California State Department of Education.

Several megabytes of files with mail list, telnet, ftp, www, and other Internet resources and people

Professional and Student Journalists Meet On-line

Andrea Perez

Subject Area:
Journalism, Language Arts
Grade Level: **9-12**

Length of Project: **One semester.** Each week the page editors sent the pages of the student newspaper (via e-mail) to an editor for critiquing.. Although it varied with the story assignments, one day a week was usually spent with a group of reporters accessing electronic databases for information . CNN newsguides and broadcasts were used at least once a week for whole group classroom instruction.

Abstract:
Students designed page layouts, wrote articles and submitted their work to an on-line editor for professional critiques. They used on-line news services to compare local and national news and to investigate how stories are written differently at the national and local levels.

I. Introduction

This project allows students to share their work outside the high school setting and to connect these future journalists with professionals in the field. Using Email, the students communicate with the editor of a daily metropolitan newspaper who critiques their writing and page designs. Students fax stories to the local newspaper for publication in the teen section. They use on-line databases to locate information for editorials, feature stories, and columns. Telecommunications brings the world of professional journalism into the classroom.

The purpose of this project is to help students make the connection between classroom instruction and "real life" skills. By communicating with professional writers and editors, students begin to apply what they have learned in the classroom to real world writing situations. As the writing process and the elements of journalism are reinforced, students begin to see themselves as writers whose job it is to make meaning from the information they have unearthed. Information literacy demands students become proficient at accessing, evaluating and applying information. Telecommunication provides students with the opportunity to access up to the minute information.

Students are divided into small cooperative groups (news, opinion page, sports, and features), each with its own editor. Student editors send the weekly paper, along with questions and critiques, to the editor of a suburban daily newspaper. Students are responsible for sharing the editor's responses with the rest of the staff. As the project progresses, student editors take on a teaching role as they share with their peers what they have learned through their on-line critiques.

This project is designed to help students meet the five basic strands of the Language Arts Framework: reading, writing, thinking, speaking, and listening. By group and individual work, students learn to access, judge, use, and present information, thus demonstrating their information literacy. Building on the concepts presented in Second to None, students show awareness of

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2. Journals

Each student keeps a journal which helps focus the activities and encourages students to explore and revisit their earlier designs and stories.

3. Breaking Into Print

Through telecommunications, student writers submit stories to the local paper 's Teen Section. Faxing information and ideas for stories allow students to connect with a potential publisher. Student writers use the modem to connect with BARK, a student publication that encourages on-line surveys and questions. Students send questions and participate in on-line questionnaires put together by student writers across the United States.

4. Professional Writers On-line

Columnists from the student paper use America On Line to find writers and columnists willing to share their experiences and thoughts with student writers. Through the News Forum, a collection of columns and columnists,.students find helpful professionals and useful sources of inspiration.

5. Information Please

Rather than depending on the local paper for ideas for stories, students survey the top news stories of the day on America On Line and Compuserve. After settling on a current topic, students electronically search back issues of magazines and newspapers on-line to find background information (America On Line, Compuserve, and Dialog were all used.) In addition to developing skills in locating and accessing information, students learn to evaluate the usefulness of information and its value in a news story.

6. Local slant to Global Problems

CNN news guides (downloaded from CORE) along with CNN broadcasts each week are used to help students evaluate professional journalists and the way news stories are researched, written, and presented. (See example below)

Using A Computer From Word Processing To Telecomputing In All Stages Of The Writing Process

Bill Sears

Mesa Verde High School
Citrus Heights, CA

Subject Areas:

Freshman English
Grade Level: **9**
(adaptable to other grade levels)

Length of Project:
Nine Weeks (One Quarter)

Through the use of library resources, students wrote an autobiography which included their heritage, their own past, and their speculations about their future. They searched on-line for genealogical resources related to their own families. Students shared their finished product with students from other places through telecommunication.

I. Introduction

Library is a function, not a place. Libraries acquire,classify, store, retrieve, and adapt information according to the needs of their users, and the medium of storage is not usually important if the student's information needs are met. Teachers and librarians should be helping individuals ask the "right" questions, not just locate the answers. The information center of the twenty-first century will require professionals who teach users how to formulate questions, stimulate curiosities, and locate answers to their questions using whatever medium delivers the best results.

The truly educated citizen of the twenty-first century will be not only "information literate" but information driven, a person who sometimes works independently and sometimes needs an information counselor (formerly a librarian). Role changes are required to fulfill this vision. The information counselor should ensure that students and staff are information literate, that is, the ability to access, evaluate, develop, and use information from a variety of sources to solve problems and communicate effectively.

This nine week autobiographical plan was developed, in partnership with the classroom teacher, to teach freshmen English students not only to be information literate but information driven, by using a computer as a tool, in all stages of the writing process from word processing, information accessing, to distant peer collaboration.

Purpose:

The purpose of this autobiography is to introduce students to the research facilities in the learning resources center, especially how to use the computers in the center as tools in the writing process and the accessing of information. This project, aimed at beginning high school students, helps the students start their high school years being information literate.

Content:

The students will produce a five chapter autobiography using a variety of

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The students develop a time line of their life based on what they already know about their heritage. They also interview parents, grandparents, and other relatives. Students use a variety of on-line genealogy databases (America On-line, Compuserve, Prodigy Genealogy Bulletin Board, LIST-SERVE ROOTS-L) to extend their research. Using "Print Shop" students develop a front cover. Students learn about and plan to develop the different parts of a book (table of contents, title page, copyright page, acknowledgments, dedication, and reference page). Students learn a variety of commands as they word process their story using WordPerfect 5.1.

2. Chapter Two—The Beginning:

Students investigate their first five years. After completing the rough draft of this chapter, and having their writing proofread by peers and teacher, students will word process the history using Wordperfect. Using a variety of sources they will research a famous person who did something important on or near their birth month/day and discuss that person in this chapter.

3. Chapter Three—The Developmental Years:

Students investigate their years from six to ten. Using a variety of sources they research several world events that happened in the tenth year of life that may have had an impact on their lives and discuss this event in this chapter.

4. Chapter Four—The Learning Years:

The students investigate their lives from age eleven to the present. They learn about their learning styles after taking a survey (Lawrence,G. (1982). People Types and Tiger Stripes: A Practical Guide to Learning Styles). They compare the results of the survey with what they know about themselves.

5. Chapter Five—The Future Years:

After viewing a video describing the future, the students write a fantasy story about their lives at the age of 30. They project themselves into the future and answer questions about their imaginary future life.

6. The students finish their books, organize them in one file on a computer disk, upload and send their products to a distant school which is doing the same activities.

7. After reading the autobiographies, students from both areas compare life styles and cultures, select an interesting autobiography and write that person asking further questions about his/her life.

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Plastic Recycling And Waste Management

by
Elliot
Barenbaum

Marina Middle School
San Francisco, CA

Subject Areas:

Environmental Science and Language Arts

Grade Levels: **7 - 12**

Length of Project: **4 to 8 weeks, minimum of three days per week, minimum of 45 minutes per day.**

Abstract:
This project involved students becoming aware of the difficulties of disposing of plastics. Students kept track of their own and their family's use of plastics. They contacted and shared information with environmentalists and waste disposal experts.

I. Introduction

Utilizing video, written resources, and telecommunication services provided by PBS Learning Link and CORE, this project examines what impact plastics consumption has on our environment. The ecological goal of this project is that students will educate their families to practice the 4 R's of waste management: Reduce, Reuse, Recycle and Reject.

If one looks up the word "educate" in a thesaurus, one sees the words "nurture and cultivate". Education uses the same terms one would find in discussing our environment. How do we relate to ourselves? How do we cultivate friendships? How do we manage our home, the Earth? Each generation is the caretaker and guardian of our planet for the next generation. As educators and parents, we are responsible for inculcating an environmental consciousness which respects and preserves our Earth and its precious resources.

Many students are unaware of the waste disposal problem in our country. They dispose of their trash. A truck comes along, collects it and takes it away. America has a mounting waste disposal problem; we are generating tons of garbage. Marketing and advertising have changed our buying habits. We use disposable razors, disposable diapers, disposable bottles, etc. In turn, this has conditioned us to use a product once and then get rid of it.

The activities in this project are aligned with the elements of the California Science Framework. They introduce students to the connections among the disciplines of physical, earth, and life sciences. The activities require that students be critical thinkers. The project utilizes community resources and offers students a look into environmental careers.

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bottle?

Use Of Plastics

How many pounds of plastic per year does the average American use?

What kinds of plastic items are recyclable?

What are some problems associated with bio-degradable plastics?

How many plastic lined disposable diapers are thrown away each year?

Disposal Of Plastics

How many pounds of plastic are dumped into the sea each year and what kinds of problems are caused by that dumping?
How many years will most plastics last when buried in a landfill?
How many tons of garbage do Americans generate per year?
What are some of the problems that waste management professionals face in regard to landfills?

What Is Plastic And How Is It Made?

What natural resources are used to make plastics?
When was plastic first developed?

Plastic In The Workplace

What percent of plastics are used for packaging?
What are some example of Low Density Polyethylene products (LDPE); examples of High Density Polyethylene products?
What are some of the uses of plastic in medicine?

Essays

After reading an article, using on-line and CD-ROM encyclopedias, and/or viewing a video, students write a short essay recording facts they have gathered and any suggested research answers they have discovered. Students also draw pictures related to this project in their journals.

Addendum

Household Disposal Data Collection Sheet

Directions:

During a five day period, record the type and number of plastic items normally placed in the garbage during this time period. Tape a copy of the Data Collection Sheet on a wall next to the waste container. During the survey period, ask all members of the household to become involved and request that they put a check mark on the line which best describes the item.

Optional: The original project requested that all plastic items be placed into a special container during the week of the survey. This practice involves rinsing out all plastic items and the need for other assurances against odors and pests. The plastic materials could be weighed for total volume and measured for amount of space usage.

Disposable diapers are plastic lined and included in the survey.

Beginning Date _____ Ending Date _____

Name_____ Number of People in Household_____

In the following statements, circle a letter which best describes your household.

1. In our household, we use paper bags instead of plastic when we shop.
   A. Frequently B. Sometimes C. Seldom D. Never

2. In our household, we make a conscious effort to recycle.
   A. Frequently B. Sometimes C. Seldom D. Never

3. In our household, we make an effort to choose products that use environmentally friendly packaging (no Styrofoam, no plastic) even should it cost more or be less convenient.
   A. Frequently B. Sometimes C. Seldom D. Never

(plastic wrap)

OTHER
NUMBER OF ITEMS _____ _____
_____ _____

Telecommunication Resources

LEARNING LINK

Select:
Curriculum Resources (R) / Science - Environment (F) /
The Problem with Plastics
Winning The War Against Garbage
Brochure on Environmental Cleanup
Resources - Do It, For Earth's Sake
ESPN Team Up to Clean Up Curriculum Guide

Select:
Discussion Center for Topics (D) / Look for Listing on Plastics Project

INTERNET RESOURCES - *Using CSUNet*

For conference newsgroups, follow the sequence below:

Electronic Services (A)/Computer Conferencing (C)
Type y (this yanks in other conferences)
Type h (this provides a help screen for using conferences
Scienvironment (a news group on environmental issues; students can read, write or reply to messages)

For an environmental service, follow the sequence below:

Electronic Services (A)/Outside Services (B)/Empire Schoolhouse (14)/Academic Wings (4)/Science and Space (4)/EcoGopher (4)/ EcoGopher Library (8)
Students use keywords (eg: plastics, polymers) for searching databases through this environmental service.

Other Internet Gateways

Using the Internet Gopher
The Gopher is a lookup tool that lets the user find Internet resources.

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Collaborative Teamwork:

Developing Multimedia Programs Using On-Line Telecommunications

Jim Roller

Science and Technology Center
Apple Valley, CA

Subject Area(s): "Thematic" to include reading, math,science, language arts, social studies, art
Grade Level(s): **2-5** *(and upwards with adaptation by teacher)*
Length of Project: On going

Abstract:

Students used California State frameworks and on-line resources to access information in order to design lessons for special needs students. They learned to use Hyperstudio and a variety of other techniques to devise, communicate and access information for these projects.

I. Introduction

Have you taken a class in the last couple of years and found yourself working in a collaborative group, developing a project or product reflecting the concepts you are learning? All over the world, businesses and educators are realizing the power of cooperative groups and collaborative teamwork. How can we as teachers better facilitate our students in learning these powerful skills as well as the academic goals and objectives we are to teach?

In this project, students will work in collaborative groups, using multimedia to develop HyperStudio "Stacks" or programs. They will use information gathered from CD-ROM and on-line telecommunications sources such as America On Line, Scholastic Network, and CORE to develop their stacks. They will use telecommunications (primarily e-mail) for the purpose of sending their stacks to other children around the country.

Although this project is currently being field tested with Gifted and Talented Education (GATE) students that attend class for three and one half hours, once a week, three weeks a month, it could be implemented in a regular or special education class at any grade level. Student lessons are created on HyperStudio stacks for the use of other students. The subjects of the stacks vary but reflect the themes from the California State Framework. Students are currently using Laser disk information from the State adopted Scott Forseman Science Series "Discover the Wonder" as well as math and language arts from State adopted series.

Bringing telecommunications into the classroom opens the door to a new way of teaching and learning for teachers as well as students. There is power in knowing how to access information and working with a partner or collaborative group to develop a project. Using telecommunications as a tool for communication, research and inquiry becomes an exciting and valuable means by which one can develop alternative methods for learning. Students and teachers experience new ways to communicate, removing them from the isolation of the traditional classroom, thus creating a new atmosphere of excitement in education.

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1. What Is Multimedia? *(three week activity)*

Students will learn to use HyperStudio, a multimedia program, and begin to publish their own "stacks" using original art, clip art graphics, original and disk library sounds, partial and full animation. Students will work in pairs and follow a preformatted sequenced plan of activities.

2. Tele-What?! *(five day integrated, thematic activity)*

Teacher will lead class discussion on basic human cultures developing distance communication technologies prior to the electronic era (drums, fire, smoke signals, mirrors, flags, etc.).

Students will be divided into teams (three to four each). Each team will develop a communication technology capable of sending understandable messages across the playground at a distance of approximately 200 yards. They must send several different kinds of messages. Students need to consider speed, accuracy, noise, and efficiency. After testing their system, students will assess the efficiency and success of their system. They will discuss with other teams in the class how they developed their ideas and how they would modify and improve their system. Students will compare and contrast their telecommunications system with today's technology. Each team will develop a HyperStudio stack or card representing the results of their findings.

3. What Is E-Mail? *(one day lesson)*

Students will learn the basics of electronic mail, how information is transferred over phone lines, how information is changed from digital to analog and back to digital, and how computers are used to send and retrieve information over distances.

4. SnailL-Mail Vs. E-Mail *(three-day in-class activity—over approximately one and one half weeks)*

Begin with a class discussion of definitions of snail-mail and e-mail. (Snail-mail may be defined as traditional letters sent through the postal system.) E-

IV. Assessment

In assessing a thematic project, one needs to be aware of growth in a variety ofareas. How students worked in cooperative learning gr oups, how their enthusiasm for the curricular areas was enhanced thr ough the use to technol - ogy, whether other teachers and parents became mor e aware of impr oved learning thr ough lesson strategies, are side benefits, not necessarily formally evaluated but noted as observable outcomes.

Stated student outcomes will be assessed using the following methods: Students' pr ogress in multimedia will be assessed using electr onic portfolios (folders on the Mac platform) r eflecting the successful development of HyperStudio stacks. Multimedia pr ojects will also r eflect understanding of academic subject areas. The use of telecommunications thr ough on-line activity, r eflecting students' use of e-mail accounts, data acquisition, etc., will be monitored by the systems operator and assessed by the teacher. Projects will also reflect "current" information pr ocur ed thr ough telecommunications as well as information learned fr om textbooks.

How Many 3's Do You See?

Gary Quiring

Winchell Elementary School
Fresno, CA

Subject Area(s):

Math, Reading, Writing, Literature

Grade Levels: **1,2**
Length of Project: **90 minutes each day for three weeks.**
Telecommunication Requirements:
A class to partner with and an individual to serve as a character impersonator.

Abstract:
Students learned patterns of three in this thematically integrated unit which covered math and literature. Students telecommunicated with another class and exchanged math problems and readings. They also communicated with a fairy tale character who answered their questions about math and the stories they were reading.

I. Introduction

The number 3 is found throughout children's classic literature. The Three Little Pigs, Goldilocks and The Three Bears, and The Three Billy Goats Gruff are just a few examples of 3's presence. The activities in this unit, which are taken from a Math Excursions 1 unit, immerse children in these classic folk tales in such a way that they begin to picture 3 + 3 as the three bears and the three little pigs standing side by side. As the students enjoy the language and drama of threesomes, they begin to recognize the mathematical connections. This thematic project connects students' reading and writing experiences and activities with primary math concepts centered around the number 3.

The purpose of telecommunication in this unit is to extend activities beyond the classroom and to allow students additional opportunities to practice the reading and math concepts they are learning. In addition, it will establish a beginning telecommunications experience.

One of the recommendation in It's Elementary, the Math Framework, and the Language Arts Framework is that educators choose depth over coverage in teaching a subject. Too often we struggle to teach to a calendar, not to real understanding. We do not allow our students the time to practice their newly formed concepts in real settings with their peers. In this manner, our students are forever novices and never experts. This project is designed to provide for depth over coverage with multiple and varied opportunities for students to practice in real world situations. With this project a new opportunity to practice is introduced in which each class participates, both as student and instructor, by designing problems for their partner class to solve and solving the problems their partner class sends. In addition, students have the opportunity to establish a personal connection with peers beyond their school within the context of the concepts they are practicing.

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E. Character Communication

In preparation for this activity, arrange for someone to impersonate the characters in the story. (Pre-service Teacher Education students at the local college or business professionals may be good resources.) The students discuss what they would like to ask a character in the story and then send their best questions to the "character" via e-mail. The story impersonator replies using the "voice" of the character.

F. Scrambled Stories

Students exchange scrambled stories with their partners. Using a 5 sentence format, each group in a class retells a story or scene from one of the "3's" stories in sequence. The order of the sentence is then scrambled and exchanged with a partner class. Groups in the partner class unscramble the sentences and transmit the correct version back.

G. Bulletin Board Building

Students construct a bulletin board character array with illustrations of the threes in each story, song, and rhyme. As the students discuss their pictorial array, the teacher posts number sentence strips next to each row to represent the students' observations and a number line is used to reinforce their counting by threes strategies.

H. Sixty Chart

Students fill in a sixty chart (10 squares across by 6 squares down) using the counting patterns they have discovered and discuss the patterns they see in the chart. Each group of students discusses and lists 4 statements about the chart, 3 of which are true and 1 of which is false. These lists are transmitted to the partner class which identifies the true statements and the false one and returns their responses. (When this activity was tested, we found that often students did not agree with the responses of their partners, which prompted an interesting and lively discussion on which class's observations were more accurate.)

I. Number House

Students build a house with doors and windows out of a refrigerator box. They use the large number house to act out teacher directed adding and subtracting story games using the threesome characters.

Change and the Weather

Philip Scrivano

Christa McAuliffe School
Bakersfield, CA

Subject Area: Science
Grade level(s): **All**
Length of Project: **4-8 weeks** Class time will be roughly thirty minutes a day for three days each week.

Abstracts:

Students participated in a weather project by predicting weather using classroom tools and on-line resources. Data was gathered and compared with the data gathered by three other classes.

I. Introduction

A. This project cultivates the idea that nature changes over time. Specifically, students will make weather observations and predictions based on scientific data collections and exchanges. Approximately three to five classrooms in different geographic areas will work together to observe, record, exchange information, and predict changes in the weather. This project enables students to carry out collaborative activities in the classroom and across grade and ability levels.

The purpose of this project is to expand the students' understanding of their environment through a greater awareness of changing climate in a wide geographic area.

B. Students at the elementary level are eager to access and create information. This curriculum plan builds upon this interest and simultaneously addresses a major theme of the 1989 California Science Framework; Change over Time. With the use of telecommunications students record climatic data outside their classrooms, create and send E-mail to other classrooms, and analyze information in comparison with other classrooms and national weather information services. Telecommunications enhances this project by enabling students to work with a variety of information from other locations.

It is important for students to learn how the environment is changing every moment. Having instant access to information helps give relevance and stimulus to this concept and also enhances the scientific method of investigation. Telecommunications access also gives students the opportunity to compare and contrast the relevance of information they collect from a variety of sources.

It is essential that students learn to work in cooperative groups put together for the purpose of problem-solving as a unit. This business approach values each individual's contribution in the problem-solving and learning process. The teacher in this situation works primarily as a facilitator of learning.

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Students create a letter of invitation to participate and send it via E-mail to other school sites. Each school site, including the host site, makes a weather observation at a predetermined time each week. The host class lists the information that participants gather. Each site then prepares an E-mail message and sends gathered information to the host site. On-line data is added to school site information. At the host site the information is gathered, analyzed, and charted on a state, national, or world map. Students also record the information and analyses in student log books.

B. Description of Group Process

Students work in triads. Each time a group uses the computer each person's job rotates. The first person is in charge of running the computer keyboard and operations. The second student logs all activities, information, and frustrations in a student journal. (This journal is individual and is included in the student's portfolio.) The third student is called "management" and is in charge of instructing the others about what to do and how to report the information in the journals.

Each group is assigned a task for the week. Assignments are changed or modified as needed throughout the project.

Data is gathered and logged by each group. The group then makes weather predictions based on the data collected and judges the accuracy of the information. Predictions and weather patterns are graphically presented by each group to the rest of the class.

Data can be gathered from the following on-line resources (activities to use with those resources are also listed):

1. Weather Michigan - Retrieve current and past weather data. Log and compare to class data and other services data.

2. Weather Compuserve, America On-Line, or Prodigy. Retrieve information from a sampling of services. Compare data and service for accuracy of information and types of information that can be retrieved.

3. Retrieve up to the minute reports of earthquake activity, log the activity, and plot the activity on the class world map.

4. Monitor auroral activity,warnings/watches/sighting that are updated hourly. Log and follow activity throughout warning period. Compare weather data to other on-line service information.

ef fect the student individually (6) evidence of use and understanding of the use of telecommunications.

El Pasajero

Maria Tovares
Corona Avenue
Elementary School
Bell, CA

Subject Areas:
Language Arts,
Social Studies,
Multicultural
Grade Level: **2**
(Could be adapted for other grade levels)

Length of Project:
Eight weeks, plus another month for students to develop a video. 60-90 minutes per day

Abstract:
This monolingual second grade Spanish class paired with a third year high school Spanish class to develop an understanding and appreciation of other cultures. The high school students sent their elementary buddies on a trip to an unknown country through telecommunications. The high school students telecommunicated information about the countries. The elementary students developed hypercards to show what they had learned and shared them with the high school students.

I. Introduction

This multi-age curriculum project is designed to provide activities that allow students to develop an awareness of the similarities and differences of other cultures. Emphasis is placed on collaborative, cooperative work and the encouragement of responsibility and success for each student.

Research on effective instructional programs for limited English proficient (LEP) students indicates that cognitive-academic development is best sustained through the use of the student's primary language. Technology can support this principle by providing primary language nurturing through telecommunication and multimedia.

This curriculum project involves a high school third year Spanish language class adopting an elementary monolingual Spanish language classroom. High school students will telecommunicate in Spanish with an elementary class on a personal basis weekly. They will send clues about an unknown country to the younger students. The high school partners will research ten countries over a month-long period through the use of searchware, CORE, America On-line and send data about the country without revealing the name to their elementary partners.

The elementary class will create a HyperCard™ stack based on the information sent by the high school students regarding their country. Using this data they will determine the name of the unknown country. Students also create a video about their country based on the information sent by the high school students. At the end of the project, the HyperCardTM stacks and videos will be exchanged with their partners.

Purpose

The goals for this curriculum project are to develop an awareness of the similarities and differences of other cultures and their countries focusing on:

- Geography
- Language
- Population

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On-line

Activity 2.(Foods)
Students design a table setting depicting a traditional meal using the clues sent by their high school partners. They devise HyperCard stacks using clip art to cut and paste pictures of foods or they may draw their own pictures using the toolbox.

Activity 3. (Population)
Students create graphs to show the population of their country. The graphs are made using ClarisWorksTM.

Activity 4. (Historical Events)
Students make personal time lines of their lives to become familiar with a time line format. Groups create a timeline based on historical events of their country using TimeLinerTM by Tom Snyder.

Activity 5. (Geography)
Teams, through class discussion and with the help of the teacher, identify three possible locations of their country. They create a Hypercard stack showing the three possible locations and the language spoken in each of the countries. They add "Hello" in each of the languages to the HyperCard stack.

Activity 6. (Dress)
Students compare and contrast the traditional dress of their country with the dress of their own country. Through the use of HyperCard™, students can create an animation or depict a morph change.

Activity 7. (Music)
Students document the musical instruments of their country. Students will draw or copy clip art of the musical instruments from their country based on the clues supplied by the high school students.

Activity 8. (Video)
Student teams research additional information about their country. They devise a storyboard (script) and create a video based on that research and the storyboard. These videos are shared with their high

Multimedia Reports: Using Emerging Technologies In Art

Ken Sakatani

Bayside Middle School
San Mateo, CA

Subject Areas:

Visual Art,
Art History,
Art Appreciation

Grade Levels:
6th, 7th, 8th grades

Length of Project:
2 to 3 weeks; 50 minute daily class periods.

Abstract:
Students created video reports about an artist. They used aesthetic valuing and perception as well as creative expression in preparing the group projects which were based on the artist's life and work.

I. Introduction

This project provides students with the opportunity to create a video report on an art subject, using computer-aided technologies, such as CD-ROM, Laser disc, Video Still Digitizing Cameras, and Telecommunications.

The study of artists and art within their historical and cultural background has mostly been taught to students through essentially passive viewing and discussion of art prints, slides, film, and videotape. The use of computers offers an alternative for art educators wishing to achieve these aesthetic and artistic goals in a different way. Electronic media, especially the use of multimedia, can engage groups of students in an active, cooperative way of learning where they can create their own meaning.

The general goals of this project are to provide students with multiple sources of information, develop their critical and organizational skills, add to their knowledge and understanding of art and artists, and have them use technologies in creative ways. These goals reflect Visual and Performing Arts Framework and Reform documents, such as Caught in the Middle, which recommend engaging students in active, cooperative learning, using technology as appropriate to enhance art learning, developing critical abilities, and communication skills. Telecommunications extends and enriches the database of information available to students and provides ways of linking with resources not readily available at the school site.

II. Student Outcomes

Students will:

- gain knowledge about certain artists and why their art is considered famous or important.
- learn how to use technological media in interactive ways
- be familiar with using CD-ROM and telecommunications to search and select information.
- create and produce a multimedia report on a famous artist.

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AV irtual Treasure Hunt In Spanish-Speaking Countries***

A Collaborative Project between a High School Spanish Language Class and a Second Grade Monolingual Spanish class

Diane Berthoin-Hernandez

North Monterey County High School
Castroville, CA

Subject Area:
Spanish III
Grade Level:
High School
Length:
One semester

Abstract:
Third year Spanish students "adopted" students in a Spanish speaking elementary school classroom. They researched and telecommunicated information about a Spanish speaking country to the students in Spanish. They presented the information to the elementary students in the form of a treasure hunt.

I. Introduction

Education in the United States has taken on an important change. We have recognized that students must become responsible learners in order to produce responsible citizens. We recognize that we must allow students to be critical thinkers and planners while still in school. Finally, we recognize the fact that depth and personalization of knowledge is imperative.

This movement in education does not exclude the second language classroom. We have a special responsibility in the second language classroom not only to prepare our students to be critical thinkers, but to use a new language to make new connections in the world.

It is exciting to think of language teaching curriculum with the new tools that computers bring to classrooms. The possibilities for creating lessons in which our students can become critical thinkers, planners, and language users now are boundary-less. The realm of Spanish speakers throughout the world is within the reach of each student who has access to telecommunications.

This project will produce two outcomes—a treasure hunt specifically designed for second grade Spanish speaking students and a Hypercard/Hyperstudio stack to demonstrate knowledge of one Spanish speaking country. The treasure hunt involves the following: The high school students form into ten groups to represent ten different Spanish speaking countries. They develop a list of topics they believe will create a pool of information which represents the culture of their chosen country. They collect the necessary data from several sources—library, CD ROM, laser disc, on-line sources and native citizens of the countries. The high school students organize and send the information in the form of clues via E-mail to the second graders who are not given the name of the country thus creating a treasure hunt for the students.

The Hyperstudio stack is produced by the high school student to demonstrate his/her knowledge of the country studied.

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their questions with class. All questions are included in the Class Portfolio.

Activity 4. So What is Culture?

a. Individually students brainstorm the meaning of culture. Ideas are shared with cooperative group. All ideas are recorded in the class portfolio.

b. Students write a two page essay about what culture is and share with group.

c: Each student brings one item from home which represents a symbol of his/her family's culture. Each shares the item and its significance to the class.

d: Create a square for the Culture Quilt. Each student receives a small paper square, glue, and scraps of paper. Using the paper, a quilt square is created which represents a cultural image of the family.

Activity 5: Collaborative Classwork

Committees are appointed to do the following:

1. put the Culture Quilt together.
2. write an introductory letter to the second grade children
3. develop a list of clue items to send to the children as they are sent out on the treasure hunt of their countries.
4. develop timeline for the project. (include research completion dates and e-mail dates)

Activity 6: Journals

Reflective Journal: After each day of the planning stage, either as a homework assignment or as an end of class activity, students write in their reflective journals about the planning stage of the project. The primary questions to answer are: What did I learn today? How did I learn this? What questions or doubts do I still have? Journals can be shared with group or whole class.

Activity 7: What is Hypercard?

After an introductory lesson on the purpose and workings of Hypercard, students choose a topic to develop a storyline for a Hypercard stack.

A physical stack of index cards is brought into class. Topics such as: How to get a pig ready for the fair, Fencing, Ballet, Basketball and My family traditions are used to create simulations which illustrate how Hypercard works. Students create Hypercard stacks. Assessment of the Hypercards by peer evaluation.

Using the information gleaned from the research completed for the second grade students, students will create a Hyper card stack with a specific audience in mind—either another high school student/adult or a second grade child. A rationale for the style and content of the Hypercard stack is be included on an Introduction card at the beginning of the stack. Students include a source card in which all resources are cited.

Activity 11: Oral presentation of the project.

Each group presents the information about the country studied. Hypercard stacks can be used in conjunction with other multimedia to support and enhance the presentations.

Activity 12: Hypercard Stacks On-line

Hypercard stacks are shared on-line with the audiences for which they were intended, i.e. stacks for adults will be shared with adults, those designed for second graders will be sent to second graders.

V. Assessment

Self evaluations and peer evaluations will be an on-going part of all activities. Class meetings will be held using specific questions about the progress made with the research. Essays, Hypercard stacks, correspondence, and clues will be examined for the effective use of Spanish, understanding of culture, evidence of communication skills, use of on-line research, and collaboration. Portfolios will be started using these artifacts.

Rationale for having partners in the second grade:

When an actor has an audience to perform for his performance resonates and shines. A quiet, dull, bored audience or no audience at all does little to improve his acting. The applause and the anticipation of his audience encourages him to do a better job at every moment. And thus we can say the same for Spanish students who so often have only a teacher to "perform" for. By establishing a strong connection with small children, the high schoolers will feel a need to perform well and provide for the best entertainment and information for their little adoptees. They are working with children who count on them to do a good job.

(In our particular situation no other on-line resources could be used except for in individual cases since NO INTERNET connection on a local level is possible. The AOL connection proved to be adequate and user friendly for students who had NO experience with on-line information and for the major-

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Energy—What's the Big Deal?

Rick Phelan

Sonoma Valley
High School
Sonoma, CA

Subject Area:
Physical Science

Grade Level: **9-12**

Time Needed:
3 weeks

Abstract:
Students in combined math and science classes researched their own and the world's energy consumption. They learned about forms of energy and participated in projects in which they investigated different methods of generating electricity. Special needs and I.E.P. students were mainstreamed into all aspects of this project.

I. Introduction

Energy has become an area of popular concern over the last 20 years. Oil crises, blackouts, brownouts, energy czars, national energy policies, alternative energy sources, and energy conservation have all found a place in America's vocabulary. This telemation unit takes a look at: Energy—What's the Big Deal? It encourages student thinking on energy consumption in the United States and around the world. Other activities develop understanding about energy in different forms and how electrical energy is generated. Various telecommunication resources are used in the unit including activities with the National Education Supercomputer, different Enviro Gophers and SearchWare/Dialog. "Energy—What's the Big Deal?" incorporates themes from the California State Science Framework in the areas of: energy, system interactions, and patterns of change.

This unit represents an abbreviation of a larger integrated thematic unit that involved a Math and Physical Science class at Sonoma Valley High School. Key reform and restructuring elements in this unit are: coordinated curriculum, "hands-on minds-on" learning, peer tutoring, and mainstreaming special education students.

Activities for the unit were drawn from many sources including UC Berkeley's Lawrence Hall of Science and the San Francisco Exploratorium. The complete science and math unit and all support materials will be available in a CORE conference area.

II. Student Outcomes

By the end of this unit students will understand....

1. How they are consumers of energy.
2. How energy consumption patterns vary around the world and compare with the U.S.
3. How energy can be seen in different forms including:

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4. To and Fro:

Transfer of Energy Students learn concepts on the different forms of energy and energy transfer through video, text, and class discussion. Using share sheets students diagram all of the energy transformations for the following situations:

a) making toast (electricity made by hydroelectric power)

b) swimming 1000 yards in 15 minutes

c) driving a car

d) light bulb in your house (electricity made by burning coal)

e) stereo in your house (electricity made by nuclear energy)

5. Energy Projects

Groups choose one project from the six choices offered below. At the end of the unit each group is responsible for a report that includes visual aids, models, and demonstrations. In addition each group is to use on-line resources through either SearchWare/Dialog or the University of Virginia's EnviroGopher to present their selection's advantages and disadvantages and future prospects. (details on each of the labs listed below will be available through a CORE conference area)

A. Measuring Energy from Fossil Fuels

Through discussion and reading students learn of the many non-fuel uses of oil, gas and coal and develop awareness of our dependence on fossil fuels. Through discussion and labs they learn about the location of petroleum deposits and the processes of distillation and combustion.

B. Electricity from Falling Water

In this project students construct and experiment with model turbines. They report on the origins of water power and its role in California's energy supply.

C. Nuclear Energy

Students explore radioactive half-life in a lab simulation and look at a nuclear fission through a simulation using a drop of oil. They estimate their annual

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Pets Around the World

Neil Bock

Imperial County Office of Education
El Centro, CA

Subject Areas: Integrated and thematic using reading, writing, language arts, math, geography and science.
Grade Level: **4**
Length of Project: **Six weeks of two sessions** per week of one or two hours per session.

Abstract:

Students do scientific research and telecommunicate and compare their data with children around the United States using National Geographic Kids Network.

I. Introduction

This Curriculum Project utilizes the "Hello" unit from National Geographic Society Kids Network. It was tested with a combined class of 64 fourth grade students. It is appropriate for students from third through seventh grades. All the activities suggested by the handbook were used and other activities were used as appropriate opportunities arose. The Curriculum Guide provided with the program is very usable as it comes, and it could be taught almost verbatim.

The excitement of doing research as part of a team, communicating electronically with other teams and sharing the results of the project with schoolmates, parents and the community will bring new dimensions to the everyday classroom routines.

The objectives and activities listed correlate closely with the California Frameworks for Science and Social Studies. The graphing skills are vital in the area of math development and give a very practical application to the use of these tools which is often missing as students are introduced to the use of charts and graphs. The collaborative aspects of the project help students to develop a level of comfort and expertise in cooperative work which is a major emphasis in all the frameworks and reform documents.

II. Student Outcomes

Students will:

- understand the scientific process as applied to their research project and will be able to apply it to other areas of study.
- understand the use of telecommunication to exchange data with others and to retrieve data from other researchers.
- understand how to collect, organize and display data in a meaningful manner.
- understand the interrelationship between environment and culture

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and surprises in the team data, then graph the combined research-team data. They will then be able to compare their own research-team data with that from the entire NGS Kids Network. This allows students to look for geographic patterns in the network pet data using computer maps.

Students discuss and decide on ways of presenting their data in a report to audiences outside the classroom, prepare the report, and present it to outside individuals or groups, such as Parent Meetings, Service Clubs, School Boards, Newspapers and other media.

Follow up activities include maintaining contact with fellow researchers in other schools using FredMail or America-On-Line. This increases the benefits of learning about telemation and sharpens the skills of writing.

IV. Assessment

Students will keep a log of the class activities and their level of participation during the unit.

Small groups will demonstrate their completion of activities for the entire class and neighboring classes.

Students will be evaluated upon the way that they show understanding of the scientific process in completion of activities.

Outcomes are evaluated by observation, verbalization by students, quality of participation in activities, and reading the individual logs or journals kept by students.

The final evaluation will be the presentations made by students to others at the conclusion of the unit.

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Where the Lilies Bloom

A Group Discovery Reading Unit

Mitchell Sprague

Mendocino Elementary School

Subject Area:
Language Arts

Grade Level: **5-8**

Length of Project:
4 to 6 weeks

Abstract:
Where the Lilies Bloom is the focus for this unit which involves telecommunications between classes in California and North Carolina where the novel takes place. Students wrote and received critiques from one another as well as tested their perceptions of life in North Carolina presently and in the past.

I. Introduction

Where the Lilies Bloom, a novel set in rural North Carolina, is an ideal book for middle school students. Its themes of responsibility, family relationships, self-reliance, and the concept of the fair land—the idea of the land being and giving equal access to all—address many issues facing middle school students in the 1990's.

Through the use of telecommunications, students explore and compare the world of modern day North Carolina with their own perceptions based on the book, and both send and receive feedback on the mechanics and the content of their writing. They also share with other students their own reflections on the theme of the book, and through the use of Inter-active Relay Chat (IRC), participate in real-time problem solving activities based on the themes of the book. Study groups of students from our class and North Carolina will be formed to write open-ended essays.

Purpose:

To explore the themes of responsibility, family relationships, self reliance, and the concept of the fair land—a land that is fair and equal to all—through reading, writing and drama activities.

The English/Language Arts Framework states that literature should reflect the culture and times of many different people and allow students a chance to explore real-life dilemmas faced by all human beings. In support of the study of these ideas, students need frequent opportunities to write short papers to express their thoughts. They also need continual chances to participate in and lead small group discussions

II. Student Outcomes

Students will:

1. learn about life and times in rural North Carolina during the depression.
2. examine the issue of self reliance and gain understanding

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Weeks 2,3,4: Time to work as a group to complete assignments as dictated by the group calendar.

Weeks 3 and 4:
Telecommunication activities with schools in North Carolina; students also search on the network for materials related to the setting of the book, and the themes studied in the book.

Week 5: Watch
"Where the Lilies Bloom" movie and complete film critique activities. Inter-active chat session with students in North Carolina who have also read the book and seen the movie is used to complete problem solving activities based on issues and themes in the book. Ideally these should be student designed and open ended.

Some examples might be:

1. Under what circumstances should middle school students be self reliant?
2. Which of the promises Mary Call is asked to keep is the most difficult?
3. Name three other alternatives Mary Call might have pursued to keep her family together.

The group will also need to develop a criteria sheet (rubric) to evaluate the answers that are received.

Writing Activities:

Students complete drafts of five writing assignments and final copies of three writing assignments of approximately one page each. Every student completes the interviews. Students work in groups on peer revising and editing. Each group decides which assignments the individuals in each group will do and in what order to do them. Each group is responsible for peer revising and peer editing.

Character Journal

Pick one of these characters: Mary Call, Romey, Devola, or Kiser. After every two chapters, write down how you feel the character would feel about the events that happened.

Personal Responsibilities

Students write an assessment of their own personal responsibilities. They participate in a prewriting activity in which they list responsibili

5. medium shot: A shot which shows roughly half of something
6. close-up shot: A shot which shows a detail on an object.
7. fade: To have the screen go slowly to black
8. zoom: To move the camera toward an object to show more detail.

They will also be given a list of ten scenes from the book and are then asked to take notes as they view the ten scenes. In the notes they should notice which cinema terms are used and how they impact the telling of the story.

Telecommunications Journal

Students will be asked to visit the following gopher and web servers and take materials from them related to North Carolina. They record their findings in a telecommunications journal to be placed in their portfolio.

North Carolina Cooperative Extension Services
(Demographic Data for North Carolina)

The News and Observer Publishing Company
(On-line newspaper company)

State Library of North Carolina
(government and statistical data)

University of North Carolina at Greensboro
(weather information)

The American South Internet Resource Center, a multimedia collection of resources for research and information about the south

State Library of North Carolina WWW Server

University of North Carolina Institute for Transportation Research and Education, in Raleigh, North Carolina

Assessment

Final assessment for the class is the completion of a portfolio of materials and work connected with the book. The following items appear in the portfolio:

- Four writing assignments which have been edited and revised by both the cooperative learning group and North Carolina partners.

Collaborative Video Production

by
Michael Crumm

Sierra Avenue
Elementary School
Oroville, CA

Subject areas:
Visual and Performing Arts.

Grade levels:
Fifth through ninth grades.

Length of Project:
Two to three months, forty to sixty minutes, three times a week.

Abstract:
In order to appreciate the power of the media, students wrote and filmed commercials. They exchanged their videos with another class and did on-line critiques of one another's products.

I. Introduction

The purpose of this project is to raise students' awareness level about the powerful influence of televised media on the world. This will be accomplished by producing commercials to sell either real or imaginary products.

Televised media is the single most powerful influence on people in the world. It affects the way people feel, think, act, and commonly challenges their deepest beliefs. Students need to discover the power of this media and the importance of being a critical viewer.

This project ties in closely with the current reform documents; especially in the areas of using higher order thinking skills and the promotion of life-long learning. The specific framework tie-in is from the Visual and Performing Arts in which students are asked to develop and expand visual arts knowledge and skills to express ideas imaginatively. Telecommunications opens up a vast array of opportunities for students as they work on this project. By utilizing E-mail they will be able to share ideas (scripts and production notes), thoughts, feelings, and get technical questions answered easily and quickly.

II. Student Outcomes

Students will:

- Write a storyboard (script) and produce a video
- Use EMail for critique
- Learn to use the editing functions of a VCR and a Camcorder.

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Prepare Commercial

Groups will write storyboard (script) and produce video commercial for their product or invention. This commercial will attempt to influence behavior by encouraging the buying of the student product.

On-line Critique

Students will exchange commercials and give on-line critique. Groups will use what they have learned about elements of design and propaganda to give feedback to other students.

IV. Assessment

The completed project, self-evaluations and writing assignments will be examined to determine the level of understanding of propaganda, design elements, and the use of telecommunications.

Would You Sell Ice Cubes To Icelanders?

Marsha Korobkin

San Diego City Schools
San Diego, CA

Subject Areas: International Business Careers, Economics, Marketing
Grade Level: **Senior High**
Length of Project: **Two weeks or more.**
Amount of time each day: variable — 1 hour/day class time, with some out of class time to examine and manipulate down-loaded data.

Abstract:
Students used on-line data services to research and develop plans for international marketing. They researched and found an American company's product for which theywrote overseas marketing strategies in order to sell the product to a particular country.

I. Introduction

In a world of shrinking borders and constant discussion of global economies and international interdependence, there is increasing economic opportunity as well as necessity for international trade. Students are especially interested in exploring careers which seem both glamorous and lucrative. In this project students become members of small companies (3-4 employees) of international trade brokers. They will earn their commissions based on how well they facilitate the match between countries that want American made goods and American providers.

Employing telecommunications to access trade related documents prepared by U.S. embassies abroad, small groups of students acting as international trade brokers use this information to select one or more American products to sell to a given foreign country. Further on-line research provides students with information about companies that could supply the desired goods. Students prepare brief marketing plans to address both the foreign country's and the American producer's needs. Finally students make telephone, mail, or fax contact with a selected company, explain their class project, and inquire about the possibility of the company's doing business with the chosen foreign country.

Purpose:

This project was designed for a Business Education class entitled International Trade Careers for which students received credit for both business education and economics. It was used once as a culminating activity and once as an introductory activity. As a culminating activity, students already were aware of some of the problems and activities involved in working in the field of international commerce. As an introductory activity the students searched for information about their country and selected a product. This information is used throughout the semester, with the marketing plan being due at the end.

This project can also be used in an Economics class as part of a framework

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for use in creating a marketing plan.
4. Show confidence they can use telecommunications in the future

Students will:

- demonstrate their understanding of the economic, geographic, legal, political, and cultural considerations involved in international trade through the data presented in their marketing plans.

- demonstrate their skill in written and oral presentations by presenting marketing plans both in writing and orally.

- demonstrate their skill using a word processing program to search, cut and paste electronic information into a new document.

III. Activities

Students participate in the following simulated, real-world experience:

Students are members of three or four person companies of international trade brokers. Because their commissions are based on the volume of business they can generate, they are in fact paid according to how well they facilitate the match between countries who want American-made goods and American providers.

The assignment is:

1. Each team will select a country-client. They will find out what American product(s) that country wants, select one, and find a company to produce that product.
2. Each team will develop two plans for their business—one for their country-client and one for their American manufacturer client using:

a) On-line data services for their basic information
   - Automated Trade Library Service (see access information below)
   - Thomas Register On-line available from Dialog Information Service

b) Group knowledge and ingenuity.

3. Marketing plans include:

a) Information that they think is relevant for their clients (both the

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The first time you log on, log on as "Public", answer the questions, and you will be given a logon identification name and password. After that, you will get immediate access when you log on. You can get some of the services (but not the important ones) through the CORE menu. Under the CORE Services menu choose [b] Information Resources, then 12 Additional information services (gopher sites), then 1 Advanced Technologies and Information Network, then 3 Automated Trade Library Service.)

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Themes Across History

Marilyn Renger

Balboa Middle School
Ventura, CA

Subject Areas: History
Grade Level(s): **6-12**
Length of Project: **Approximately six weeks** with three days per week available for computer (modem) access time so that each group uses the modem at least once a week, more if possible.

Abstract:

Students compared past and present events to find commonalities and relationships. Working in groups, they researched both online and with traditional materials to generate discussion and writing about critical attributes of current and past happenings.

I. Introduction

It has been said that those who do not know the past are condemned to repeat it. But if our students don't see the direct application and connection between the past and the present, history has little meaning for them. The connections and similarities between the past and the present are the emphases of this unit.

There are many themes that recur throughout history such as revolution, exploration, the push for human rights, etc. One of the main charges of the History/Social Science Framework is that students in the upper grade levels make connections between time periods in the past and the present. This project seeks to do that by having students identify themes in units they study of the past and finding modern day examples of those themes in the present. Using conventional research materials and telecommunications, students research both a past event from the course of study and a modern event. They create timelines for both events, a brief oral summary, a log of articles, and a Venn diagram showing the areas of similarities and differences between the two events. Students work collaboratively in groups for their research and to jointly present an oral report. Individually they prepare timelines and Venn diagrams.

This project directly supports the opening and closing units of the History/Social Science framework at each grade level beginning with the sixth grade. Telecommunication enhances this project because it allows the students to see what is happening with their present day topic on a daily or at least weekly level. It gives them access to news services that go far beyond what is available to them in their homes or local libraries.

The goals students achieved with this project included the ability to work cooperatively in groups, becoming technically literate, and seeing the connections between historical and current events.

II. Student Outcomes

At the end of the project students will understand:

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Timelines, Oral Reports, Journals, Venn Diagram	Students who are not using the modem use books collected from the library in a subject search to work on their historical events or work on daily assignments from the text. At least three days a week are needed on-line for every group to have access to the modem.
IV. Assessment	**Timeline** The sequence of the events that make up the historical moment is important. Students select at least 5 significant dates for each past and present event. They create two timelines, one for the past event and one for the present, and place important dates on the timeline. Pictures and a title are included as well as labels for each date. **Venn Diagram** Each person in the group creates a Venn diagram which shows the intersections between the present and past events. It includes significant information, shows the theme, and is illustrated. **Oral Presentation** Groups prepare and present what they have learned to the class. The following is included: 1. An introduction which connects the historical theme with the past and present events. 2. A summary of the events, important dates, and issues uncovered by research. 3. A conclusion which which shows the importance of the themes and events. **Journals** Students keep journals which reflect their thoughts and learning during this process. The Venn diagram, the journal, an illustrated timeline, plus the presentation to the class will show understanding of the relationships between historical

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C. Telementor Application and Recruitment Materials

1. State Telementor Application
2. Local Telementor Application

CALIFORNIA TECHNOLOGY PROJECT

TELEMATION PROJECT

Professional Development
In the Application of Telecommunications
For Information Literacy

September, 1993

Dear Educator:

You are invited to join us in a ground-breaking project exploring telecommunications in K-12 student settings! Telemation Project partners will offer professional development training in computer-based telecommunications applications to increase the use of electronic learning to meet this shared goal.

In late October, 1993, educators will be selected to serve as regional telecommunications trainers. These trainers will be known as **Telementors**. Using the attached Telementor Application, each partner agency will select and make a preliminary nomination of three Telementor applicants. A Telemation Review Board will select one Telementor from each partner agency to join a statewide team of twenty Telementors that reflect curricular program strengths, professional development skills, and demographic and geographic factors across the state.

Telementor Benefits

➢ Telementors will receive advanced training in curriculum development, group facilitation skills, telecommunications and other current technology usage. Training Session I is scheduled for December 9, 10, and 11, 1993; Session II is *tentatively* scheduled for March 10, 11, and 12, 1994.
➢ Telementors will be identified as a member of the Telemation Project Telementor Team. They can apply what they learn to enhance district and site capacity to effectively utilize technology.
➢ Telementors will receive a personal stipend of $3,000.00.

Telementor Responsibilities

➢ Telementors will develop a plan that integrates telecommunication-based resources into California framework-based curricular content, emphasizing the instructional strategies featured in California's reform documents. Each will test and evaluate these plans with students, and then share results at Telementor Training, Session II.
➢ In partnership and with support from the Butte County Superintendent of Schools' office, the selected Telementor will plan and conduct a five-day Telemation Institute for 24 participants from their region in the spring/summer of 1994.
➢ Following the local institute, Telementors will regularly use telecommunications to give on-line assistance to those trained locally. One shared goal will be for each to develop a site-plan for the access, evaluation, and use of telecommunication information resources. Telementors will also need to keep in touch with the Telemation Project Management and the Telementor Team.

We invite you to complete this application and to submit it by October 22, 1993. If you have questions, please phone me at (916) 245-7951.

Sincerely yours,

Midge Kenyon
Coordinator, SuperTech Consortium
Gateway Unified School District

TELEMENTOR APPLICATION

Please check those that apply.

Requirements for Telementor Applicants

- ❒ You currently work with K-12 students on a regular basis.
- ❒ You have successful presentation and professional development skills.
- ❒ You have an email account and can send/receive information via computer telecommunications.

Desirable Skills For Telementor Applicants

- ❒ Knowledge of the California Frameworks and Reform Documents
- ❒ History of Strong Leadership in Curriculum Development
- ❒ Application of the Principles of Learning and Instructional Strategies
- ❒ Group Facilitation, Organization and Leadership Skills
- ❒ Strong Communication and Interpersonal Skills
- ❒ Knowledge and Application of Educational Technology
- ❒ Experience with Information Resources Management
- ❒ Experience in teaching language minority students
- ❒ Experience in teaching students at risk

I. ABOUT THE APPLICANT

Please type or print clearly!

Name: _____

District: _____ County: _____

School: _____ Year Round? ❒ Yes ❒ No

School address: _____ City, State, Zip: _____

Work phone: ( ) _____ Home phone: ( ) _____

Home address: _____ City, State, Zip: _____

Current teaching assignment (Grade level/subject area): _____

Particular curriculum strength (check only one): ❒ English/Language Arts; ❒ History/Social Science; ❒ Mathematics; ❒ Physical Education; ❒ Science; ❒ Visual/Performing Arts; ❒ Other _____.

Special programs (check all which apply): ❒ English Language Learners (ESL/LEP/NEP); ❒ Chapter 1; ❒ GATE; ❒ Bilingual classroom; ❒ Special Education; ❒ Regional Occupational Program (ROP); ❒ Adult Education; ❒ Migrant Education; ❒ Parents; ❒ Home-School; ❒ Other _____.

II. About the Applicant's Use of/Access to Technology

Equipment status:

Do you have access to a computer/modem/phone line on a regular basis in your daily work room?

❒ Yes ❒ No If "No," where can you access a computer/modem/phone line at your work site. _____

Modem attached to your daily-use computer ? ❒ Yes If yes, baud rate? _____ ❒ No

Is there a phone line for the computer/modem where you work with students? ❒ Yes ❒ No

Type/number of computer(s) you use/could use with students on a daily basis. _____

Computer/modem at home? ❒ Yes If yes, baud rate? _____ ❒ No

Have you ever used computer-based on-line communications in your classroom?

❒ Yes, for student activities. ❒ Yes, for personal or professional purposes. ❒ No.

At present, how frequently do you use computer telecommunications?

❒ Monthly ❒ Bi-weekly ❒ Weekly ❒ Daily ❒ Other _____

Connected to a printer? ❒ Yes, at home. ❒ Yes, at school. ❒ No.

Which telecommunications service(s) do you use/have you used?

❒ CORE (CSUnet/CORE) ❒ CompuServe ❒ Dialog ❒ FrEdMail ❒ KidsNet
❒ Learning Link ❒ Prodigy ❒ America On-Line ❒ Other _____

III. Professional Development Section

How many professional development sessions have you given? _____ Approx. # trained? _____

What are the topics of your training sessions? _____

IV. Applicant Essay Section

Write an essay response for each of the two questions which follow. On your essay, please restate the question and then give an answer of no more than 600 words for each response. The questions do not count as part of your maximum-of-600-words' answer.

Question 1: What is the advantage for students who can use telecommunications-based resources in addition to other resources available through local and school-site sources?

Question 2: What do you see as the greatest advantage for a teacher who uses telecommunications for his or her own use and for classroom applications with students?

Use your preferred electronic service to send your responses to the following Telemation Project Partner email address: << mkenyon@ctp.org >>. These must be on-line by the October 22, 1993, application due-date.

V. References to Support This Application

Please enclose with this application TWO LETTERS of REFERENCE attesting to your abilities and expertise as a staff developer and as a teacher. It would be helpful if you asked the responders to include mention of items you checked in the box at the top of page 2 of this application.

VI. Commitments -- Telemation Project & Telemation Partners

➢ The Telemation Project will support all travel, lodging, meals, and materials appropriate to the six days of training offered in two three-day sessions scheduled for selected Telementors.
➢ The Telemation Project will provide the California Technology Project's (CTP) TeleLearning Mobile Unit (TMU) for the local Telemation Institute five-day training session.
➢ The local Telemation Project Partner will assist the Telementor in the facilitation and coordination of the five-day training institute.
➢ The local Telemation Project Partner will assist and support the Telementor as he or she conducts on-line, follow-up communication and activities.

VII. Commitments --- In-Kind District and Site Support

➢ Each Telementor will be involved in six (6) days of Telementor training and (5) days conducting a local telecommunications training institute. The district must be responsible for providing release time and cover substitute costs, as needed, for the December 9-11 and *tentative* March 10-12 Telementor training. In addition, substitute costs may also be needed during the local five-day training institute.
➢ One phone line and one modem need to be available at the Telementor's work site. The district/site administrator will support the Telementor's need to conduct follow-up activities through the Fall of 1994, so that he or she can communicate on-line with the Telemation Project management staff and with those trained at the local institute.

A signature of support is needed from a site or district administrator to assure that the Telementor will be able to comply with Telementor responsibilities.

Name of Administrator (type or print clearly):_____

Title: _____

Signature: _____ Date: _____

Submission Process for this Telementor Application

Make at least one copy of this application and the two references for your own files. Complete and send this entire 4-page application with the two references to the following:

Midge Kenyon, SuperTech Consortium
Gateway Unified School District
4411 Mt. Lakes Blvd., Redding, CA 96003

Applications and references (and on-line essay submissions) MUST BE RECEIVED no later than Friday, October 22, 1993.
As an original signature appears on this application, it may not be submitted by fax.
Final Telementor selections will be announced by mid-November.
QUESTIONS? Phone Midge at 916-245-7951 or the CTP office @ 1-800-272-8743

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CALIFORNIA TECHNOLOGY PROJECT

TELEMATION PROJECT

Professional Development
In the Application of Telecommunications
For Information Literacy

February, 1994

Dear Educator:

You are invited to join us in a ground-breaking project exploring telecommunications in K-12 student settings! The Telemation Project partners and state telementors will offer training in in computer-based telecommunications for the classroom.

During the week of October 17-21, 1994, the San Bernardino County Superintendent of Schools and James Roller, State Telementor, will offer a five-day institute to train educators in the use of telecomputing and other technology for classroom applications. A Telemation Review Board will select twenty-four (24) Local Telementors to receive this specialized training.

Local Telementor Benefits

➢ Local Telementors will receive training in curriculum development, group facilitation skills, telecommunications and other current technology. Training for the San Bernardino County Superintendent of Schools' Telemation Institute will take place at the Apple Valley USD Science and Technology Center, James Roller's sponsoring district and work site.

➢ Local Telementors will receive a comprehensive collection of instructional resources and other materials, including model curricular units developed by the team of twenty (20) State Telementors.

➢ Local Telementors will receive assistance in developing a classroom unit in the curriculum of their choice, and will have a collection of all such units developed by others in the local Technology Institute.

➢ Local Telementors will be identified as members of the San Bernardino County Superintendent of Schools' Regional Telementor Team. Each can apply what he or she learns to enhance district and site capacity to more effectively utilize technology.

➢ Local Telementors will receive a personal stipend of $400.00.

Local Telementor Responsibilities

➢ Local Telementors will develop a site plan for the use of on-line resources for a classroom unit. The plan will emphasize instructional strategies featured in California's reform documents.

➢ Local Telementors will implement and evaluate the classroom unit created during the Telemation Institute.

➢ Following the Technology Institute, Local Telementors will use telecommunications a minimum of once each week to share on-line experiences with others who have been trained.

➢ By June, 1995, Local Telementors will attend a minimum of two days' follow-up Telemation Institute training.

➢ In partnership and with support from the San Bernardino County Superintendent of Schools/State Telementor team, the Local Telementor will plan and conduct a site or district training session in the use of telecomputing.

We invite you to complete this application and to submit it by March 4, 1994. If you have questions, please phone me at (909) 387-3137.

Sincerely yours,

Patricia Holloway Johnston

Patricia Holloway Johnston, Coordinator of Educational Technology
San Bernardino County Superintendent of Schools

LOCAL TELEMENTOR APPLICATION

Please check all which apply.

Requirements for Local Telementor Applicants

- ❒ You currently work with K-12 students on a regular basis.
- ❒ You are willing to plan and teach a curricular unit using telecomputing, and to present telecomputing training to others at your site or district.
- ❒ You have or will acquire an e-mail account to send/receive information via computer telecommunications prior to the Telemation Institute.

Desirable Skills For Local Telementor Applicants

- ❒ Knowledge of the California curriculum frameworks and reform documents
- ❒ History of site or district leadership in curriculum development
- ❒ Understanding of the principles of learning and instructional strategies
- ❒ Group facilitation, organization and leadership skills
- ❒ Strong communication and interpersonal skills
- ❒ Knowledge and use of educational technology
- ❒ Experience with information resources management
- ❒ Experience in teaching language acquisition to limited-English students
- ❒ Experience in teaching at-risk students

I. ABOUT THE APPLICANT

Please type or print clearly!

Name: _____

District: _____ County: _____

School: _____ Year Round? ❒ Yes ❒ No

School address: _____ City, State, Zip: _____

Work phone: ( ) _____ Home phone: ( ) _____

Home address: _____ City, State, Zip: _____

Current teaching assignment (grade level/subject area): _____

Curriculum strength (check only one): ❒ English/Language Arts; ❒ History/Social Science; ❒ Mathematics; ❒ Physical Education; ❒ Science; ❒ Visual/Performing Arts; ❒ Other _____.

Special programs (check all which apply): ❒ English Language Learners (ESL/LEP/NEP); ❒ Chapter 1; ❒ GATE; ❒ Bilingual classroom; ❒ Special Education; ❒ Regional Occupational Program (ROP); ❒ Adult Education; ❒ Migrant Education; ❒ Parents; ❒ Home-School: ❒ Other _____.

II. About the Applicant's Use of/Access to Technology

Equipment status:

Do you have access to a computer/modem/phone line on a regular basis in your daily work room?

❒ Yes ❒ No If "No," where can you access a computer/modem/phone line at your work site. _____

Modem attached to your daily-use computer ? ❒ Yes If yes, baud rate? _____ ❒ No

Is there a phone line for the computer/modem where you work with students? ❒ Yes ❒ No

Type/number of computer(s) you use/could use with students on a daily basis. _____

Computer and modem at home? ❒ Yes If yes, baud rate? _____ ❒ No

Have you ever used computer-based on-line communications in your classroom?

❒ Yes, for student activities. ❒ Yes, for personal or professional purposes. ❒ No.

At present, how frequently do you use computer telecommunications?

❒ Monthly ❒ Bi-weekly ❒ Weekly ❒ Daily ❒ Other _____

Connected to a printer? ❒ Yes, at home. ❒ Yes, at school. ❒ No.

Which telecommunications service(s) do you use/have you used?

❒ CORE (CSUnet/CORE) ❒ CompuServe ❒ Dialog ❒ FrEdMail ❒ KidsNet

❒ Learning Link ❒ Prodigy ❒ America On-Line ❒ Other _____

III. Professional Development Section

List professional development sessions (such as Subject Matter Projects, Technology Leadership Academies, Technology Training Institutes, etc.) you have successfully completed and explain the impact these have had on you.

_____

_____

_____

What professional development sessions have you offered to staff or others, at conferences, etc. ?

_____

_____

_____

IV. Applicant Essay Section

Write an essay response for each of the three questions which follow. Please restate each question followed by an answer of no more than 600 words.

Q1: As an educator, why would you use telecomputing for classroom applications with students?

Q2: Specifically, what experiences in telecomputing have you had?

Q3: Following Telemation Institute training, what kinds of activities would you plan to share information about telecomputing with fellow teachers?

Use your preferred electronic service to send responses to
<< pajohns@ctp.org >> by the March 4, 1994 due-date.

V. REFERENCES TO SUPPORT THIS APPLICATION

Please enclose with this application TWO LETTERS of REFERENCE attesting to your abilities and expertise in relationship to the items you checked on the top of page 2 of this application. We recommend that you ask responders to reference the items you checked.

VI. COMMITMENTS -- TELEMATION PARTNER & STATE TELEMENTOR TEAM

- The Telemation Partner/State Telementor (TTP/ST) team will provide all materials appropriate to the five days of training offered during the Telemation Institute.
- The TTP/ST team will provide the California Technology Project's (CTP) TeleLearning Mobile Unit (TMU) for the local Telemation Institute five-day training session.
- The TTP/ST team will assist the Local Telementor in planning and implementing a curricular unit and a site or district telecomputing training session.
- The TTP/ST team will assist and support the Local Telementor as he or she conducts on-line, follow-up communication and activities.
- The TTP/ST team, in collaboration with ACSA, will offer a two-part telecomputing training for school site administrators. This training will take place during scheduled Telemation Institute dates.

VII. COMMITMENTS -- DISTRICT AND SITE SUPPORT

- Each Local Telementor will be involved in (5) days of telecomputing training. The district must be responsible for providing release time and cover substitute costs, as needed, for these five days.
- One phone line and one modem (9600 or higher-speed baud) needs to be available to the Local Telementor at his or her work site. The site administrator will support the Local Telementor's need to conduct follow-up activities through the Summer of 1995, and will support his or her need to successfully communicate on-line with Local and State Telementors.
- The site administrator (or his/her appointed district administrator designée) will be invited to attend a training session sponsored by ACSA, planned to take place during the Telemation Institute.

My signature indicates support of items in Section VII above, and assures that our Local Telementor candidate will be able to comply with all Local Telementor responsibilities.

Name of Administrator (type or print clearly): _____

Title: _____

District and School: _____

Signature: _____ Date: _____

SUBMISSION PROCESS FOR THIS LOCAL TELEMENTOR APPLICATION

Make at least one copy of this application and the two references for your own files. Complete and send this entire 4-page application with the two references to the following:

Patricia Holloway Johnston, The Telemation Project
San Bernardino County Superintendent of Schools
601 North E Street, San Bernardino, CA 92410-3093

(1) Applications, (2) references, and (3) on-line essay submissions MUST BE RECEIVED no later than Friday, March 4, 1994.

As an original signature appears on this application, it may not be submitted by fax.

Local Telementor selections will be announced by March 25, 1994.

QUESTIONS? Phone Pat Holloway Johnston at (909) 387-3137 or the CTP office @ 1-800-272-8743

D. List of Partners and Telementors

PARTNERS

Project Manager
Director: Christina Doyle (cdoyle)
CTP Director: Keith Vogt (kvogt)
California Technology Project
P.O. Box 9050
Costa Mesa, CA 92628
phone: (714) 966-4268
fax: (714) 434-0231

Currie Developer: Lani Martin (lanimar)
phone: (310) 596-6678

Fiscal Adminstrator (LEA)
Ellis Vance (evance)
phone: (209) 265-3089
Eileen Walters (ewalter)
phone: (209) 265-3087
Fresno County Office of Education
1111 Van Ness
Fresno, CA 93721
fax: (209) 237-3525

Project Monitor
Frank Wallace (fwallac)
California State Department of Educ.
Educational Technology Unit, 3rd Floor
P.O. Box 944272
Sacramento, CA 94244-2720
phone: (916) 657-4388
fax: (916) 657-4978

ACSA
Director: Jane Zinner (jzinner)
1575 Old Bayshore Highway
Burlingame, CA 94010
phone: (415) 692-4300
fax: (415) 692-6858
Contact: Linda Vaughan (lvaugha)
phone: (415) 692-4300

TELEMENTORS

Andrea Perez (aperez)
Lemoore High School
101 E. Bush St.
Lemoore, CA 93245
phone: (209) 924-6600 x.267

Gary Quiring (gquirin)
S.B. Anthony Elementary School
7864 Detroit Blvd.
Sacramento, CA 95832
phone: (916) 399-5353

Scott Smith (scsmith)
Valley Oak Middle School
2000 N. Lovers Ln.
Visalia, CA 93292
phone: (209) 730-7681

Rowland Baker (rowbake)
Santa Cruz County Office of Ed.
809 Bay Ave., Suite H
Capitola, CA 95010-2146
phone: (408) 479-5346

Alameda COE
Bonnie Marks (bmarks)
School Technology Center
313 W. Winton Ave.
Hayward, CA 94544-1198
phone: (510) 670-4162
fax: (510) 670-4161

Butte COE
Tim McClure (tmcclur)
Instructional Resource Center
5 County Center Drive
Oroville, CA 95965
phone: (916) 538-7231
fax: (916) 538-7846

Research/Evaluation
John Cradler (jcradle@fwl.org)
Far West Laboratory
730 Harrison St.
San Francisco, CA 94107-1242
phone: (415) 565-3018
fax: (415) 241-2746

The California Arts Project
Glenda Gentry (ggentry)
1111 Las Gallinas
San Rafael, CA 94903
phone: (415) 499-5893
fax: (415) 449-5896

Imperial COE
Leticia "Letty" Groom (lgroom)
1398 Sperber Rd.
El Centro, CA 92243
phone: (619) 339-6402
fax: (619) 353-3865

KQED
Steve Klein (sklein)
2601 Mariposa St.
San Francisco, CA 94110
phone: (415) 553-2472
fax: (415) 553-2380

KERN County Supt. of Schools
John Lindsay (jlindsa)
5801 Sundale Ave.
Bakersfield, CA 93309
phone: (805) 636-4625
fax: (805) 398-3698

Bob Shayler (bshayle)
San Leandro High School
2200 Bancroft Ave.
San Leandro, CA 94546
phone: (510) 667-3541

Mike Crumm (mcrumm)
Sierra Avenue Elementary
1050 Sierra Ave.
Oroville, CA 95965
phone: (916) 533-2212

Ken Sakatani (ksakata)
Bayside Middle School
2025 Kehoe Ave.
San Mateo, CA 94403
phone: (415) 312-7664

Neil Bock (nbock)
Imperial County Office of Ed
1398 Sperber Rd.
El Centro, CA 92243
phone: (619) 339-6400

Elliot Barenbaum (ebarenb)
Marina Middle School
3500 Filmore St.
San Francisco, CA 94123
phone: (415) 749-3495

Philip Scrivano (pscriva)
Laurelglen Elementary School
2601 El Portal Drive
Bakersfield, CA 93309
phone: (805) 831-4444

LA NASDC
Andy Dumas (adumas@aol.com)
North 1401 Thor Court, Suite 112
Spokane, WA 99202
phone: (509) 535-7084
fax: (same as phone)

Contact: Michele Parga (mparga)
Elizabeth Street Learning Center
1559 Pacific Coast Highway, #148
Hermosa Beach, CA 90254
phone: (213) 560-4601
fax: (213) 560-8412

Marta Tovares (mtovare)
Corona Avenue Elementary
3825 Bell Ave.
Bell, CA 90201
phone: (213) 771-6667

Mendocino Unified School District
Ken Matheson (ken@mendocino.k12.ca.us)
P.O. Box 1154
Mendocino, CA 95460
phone: (707) 937-5868
fax: (707) 937-0714

Mitchell Sprague (msprague)
Mendocino Elementary
P.O. Box 226
Mendocino, CA 95460
phone: (707) 937-0564

Sacramonto COE
Penny Kastanis (pennyk)
9738 Lincoln Village Dr.
Sacramento, CA 95827
phone: (916) 228-2344
fax: (916) 228-2493

Bill Sears (bsears)
County Office Library
9739 Lincoln Village Dr.
Sacramento, CA 95827-3302
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Ventura COE
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